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APPENDICES

APPENDIX A

HPLC VALIDATION

Validation for the quantitative determination of indomethacin by HPLC

1. Accuracy

These experiments were conducted to verify that the methods used for indomethacin analysis in phosphate buffer pH 7.4, in BCD solution and in SLS solution were sufficiently accurate and precise. The calibration curve of standard solutions of IMC for accuracy determination was shown in Figure 8A. The accuracy is calculated from the test results as percentage of analyte recovered by the assay (USP XXIII).

a) Analysis of Indomethacin In pH 7.4 phosphate buffer

Table 1A shows percent analytical recovery at each IMC concentration in phosphate buffer pH 7.4 and Figure 1A shows typical chromatogram of IMC in phosphate buffer pH 7.4. The mean percent analytical recovery was sufficiently high (100.50%) with a low %CV (coefficient of variation, 3.19%), which indicated that HPLC method was accurate for quantitative analysis of IMC in the range of concentration studied.

b) Analysis of indomethacin in phosphate buffer pH 7.4 containing beta cyclodextrin

Figure 2A shows typical chromatogram of IMC in phosphate buffer pH 7.4 containing beta cyclodextrin. The percent analytical recovery of each concentration of IMC with BCD in phosphate buffer pH 7.4 was shown in Table 2A. The results showed that the recovery was sufficiently high (close to 100%), although %CV of the percentage recovery was higher than that obtained from the IMC in phosphate buffer pH 7.4. These results indicated that the satisfactory quantitation of IMC and beta cyclodextrin in phosphate buffer pH 7.4 was achieved by using HPLC. Although accuracy within 2% of actual values is required, accuracy within 10% of the true value is still achievable. There are some errors in any part of HPLC method can

have effect on accuracy such as improper data handling because the reference standard materials are not certified standard. This effect can be reduced by using additional chromatographic methods (such as TLC, GC etc.) to confirm that a single pure compound exists for use as a reference standard (Practical HPLC method development, 1997).

Table 1A Accuracy data of indomethacin in phosphate buffer pH 7.4 analysis

| Actual Concentration (mcg/ml) | Analytical Concentration (mcg/ml) | % Recovery |
|----------------------------------|--------------------------------------|---------------------------------------|
| 50 | 48.08 | 96.16 |
| | 48.16 | 96.32 |
| | 48.13 | 96.26 |
| 150 | 154.82 | 103.21 |
| | 153.66 | 102.44 |
| | 153.39 | 102.26 |
| 350 | 359.76 | 102.79 |
| | 357.97 | 102.28 |
| | 359.82 | 102.80 |
| | | Mean = 100.50 SD = 3.21 %CV = 3.19 |

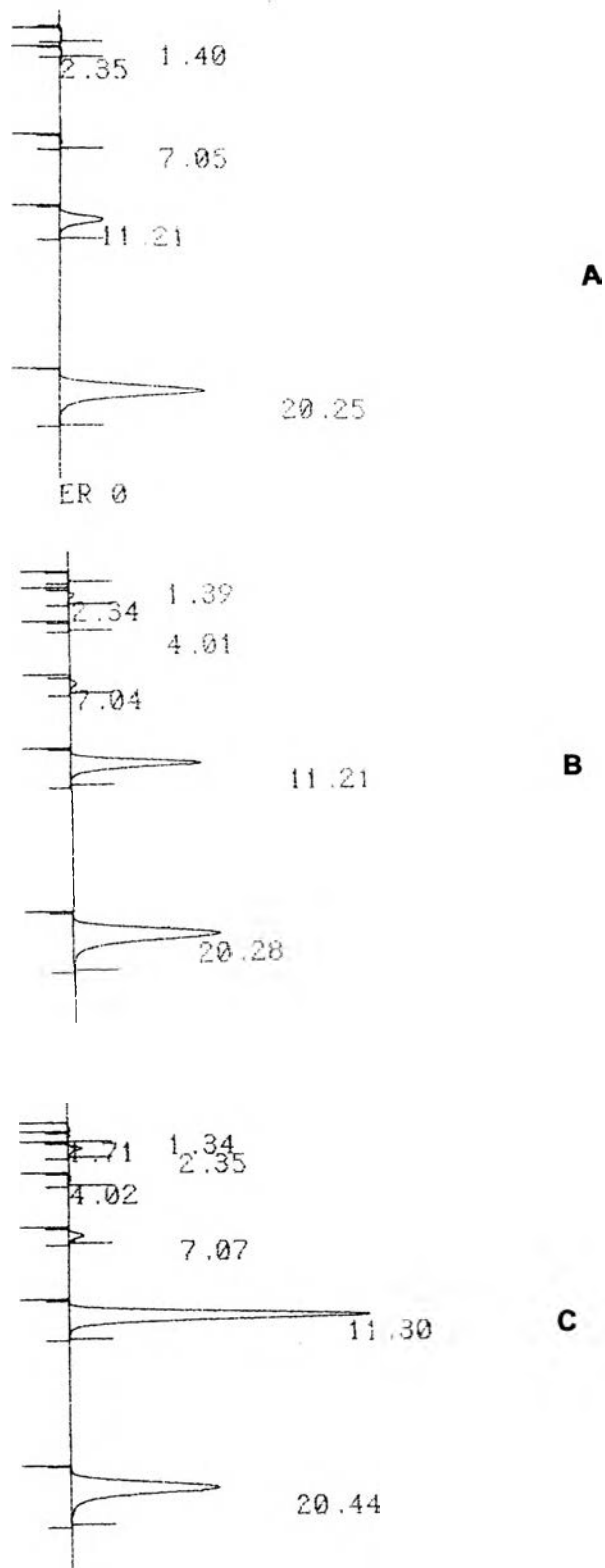


Figure 1A HPLC chromatograms of indomethacin in phosphate buffer pH 7.4. [50 mcg/ml,(A); 150 mcg/ml,(B); and 350 mcg/ml,(C)].

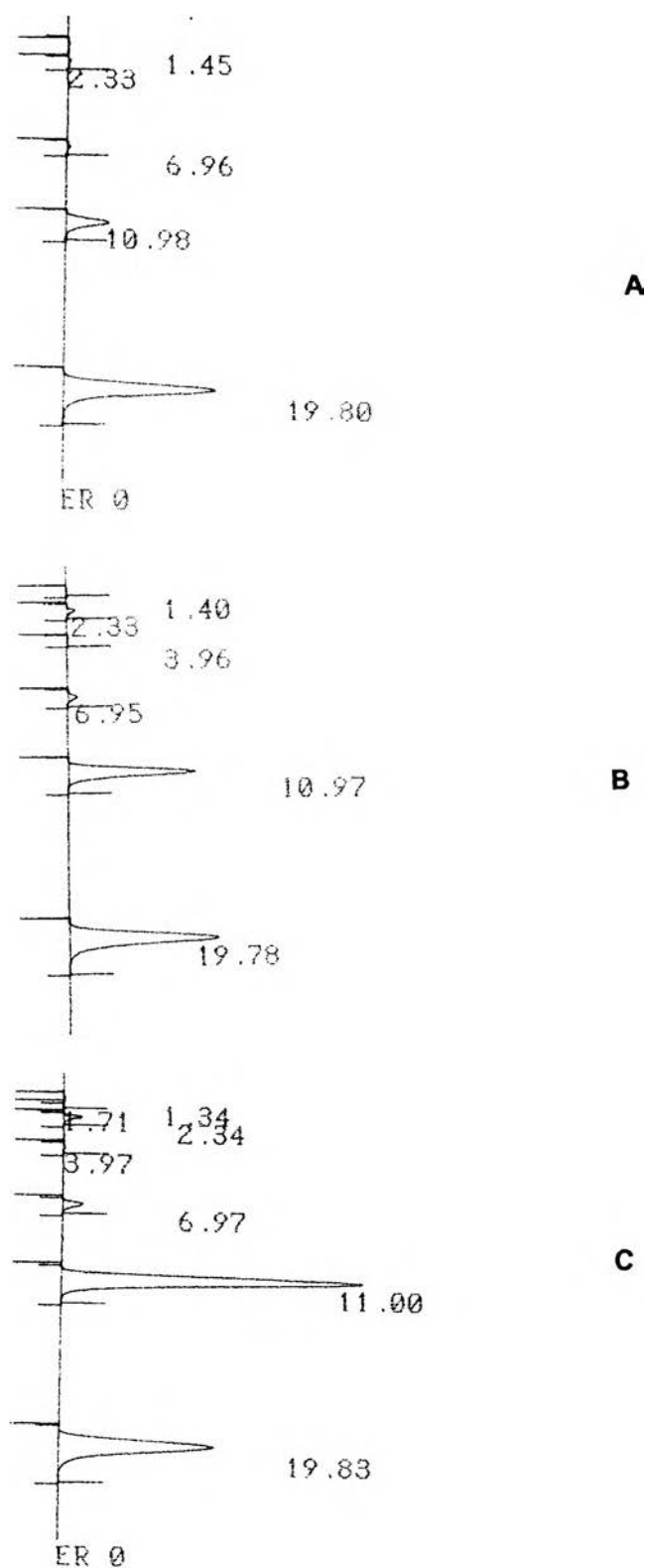


Figure 2A HPLC chromatograms of indomethacin in phosphate buffer pH 7.4 containing beta cyclodextrin. [50 mcg/ml, (A); 150 mcg/ml, (B); and 350 mcg/ml, (C)].

Table 2A Accuracy data of indomethacin with beta cyclodextrin in phosphate buffer pH 7.4

| Actual Concentration (mcg/ml) | Analytical concentration (mcg/ml) | % Recovery |
|----------------------------------|--------------------------------------|--------------------------------------|
| 50.00 | 46.29 | 92.58 |
| | 45.92 | 91.84 |
| | 45.89 | 91.79 |
| 150.00 | 149.55 | 99.70 |
| | 149.26 | 99.51 |
| | 148.58 | 99.05 |
| 350.00 | 353.66 | 101.05 |
| | 352.66 | 100.76 |
| | 357.97 | 102.28 |
| | | Mean = 97.62 SD = 4.27 %CV = 4.37 |

c) Analysis of Indomethacin in phosphate buffer pH 7.4 containing sodium lauryl sulfate

Table 3A showed percent analytical recovery of each concentration of IMC in phosphate buffer pH 7.4 containing SLS and Figure 3A showed typical chromatogram of IMC in phosphate buffer pH 7.4 containing sodium lauryl sulfate. All the percentages of analytical recovery of all drug concentrations with a mean of 97.06% and a %CV of 1.92 indicated the high accuracy of this method.

Table 3A Data for accuracy of analysis indomethacin in sodium lauryl sulfate solution

| Actual Concentration (mcg/ml) | Analytical Concentration (mcg/ml) | % Recovery |
|----------------------------------|--------------------------------------|--------------------------------------|
| 50.00 | 49.66 | 99.32 |
| | 49.66 | 99.32 |
| | 49.34 | 98.68 |
| 150.00 | 143.05 | 95.37 |
| | 142.53 | 95.02 |
| | 142.45 | 94.96 |
| 350.00 | 340.11 | 97.17 |
| | 339.16 | 96.90 |
| | 338.76 | 96.79 |
| | | Mean = 97.06 SD = 1.86 %CV = 1.92 |

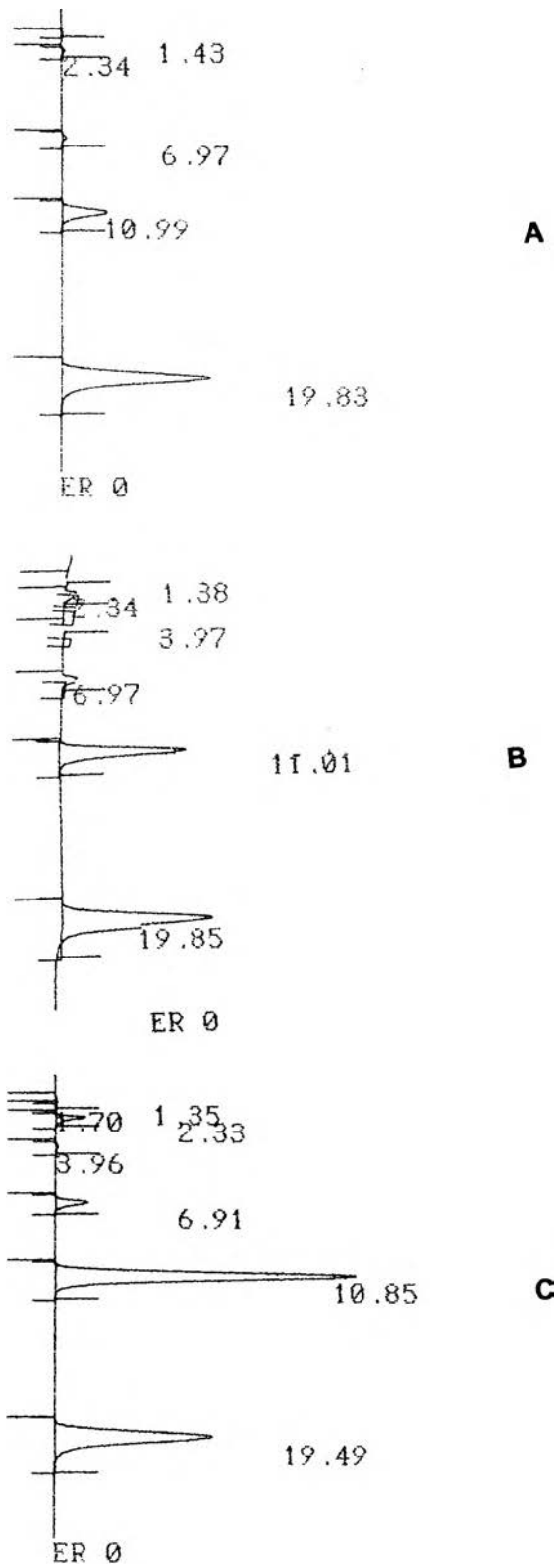


Figure 3A HPLC chromatograms of indomethacin in phosphate buffer pH 7.4 containing sodium lauryl sulfate. [50 mcg/ml, (A); 150 mcg/ml, (B); and 350 mcg/ml, (C)].

2. Precision

The precision of an analytical method is usually expressed as the standard deviation or relative standard deviation (coefficient of variation). Table 4A and 5A illustrated the data of within run precision, a measure of either degree of reproducibility or repeatability of the analytical method under normal operating conditions in the same day (USP 23), and between run precision, the same as within run precision referred to use of analytical procedure on different days (USP 23), respectively. All coefficient of variation values were in the range of 0.1109-3.6666. This indicated that the HPLC method used were precise for quantitation of IMC concentrations in the range studied. Although the %CV of 1 to 2% may be required, less precise methods (%CV \geq 2%) can be still acceptable. Some errors (such as sample preparation technique etc.) can have an effect on precision. The less precise methods need to be defined accurately by increase the number of replicates performed but it is time-consuming method (Practical HPLC method development, 1997).

3. Specificity

Peak of blank buffer solution and methanol appears in the chromatograms (Figure 4A). Their retention times are 1.45 and 2.63 min, respectively. Figure 7A and 8A shows typical chromatograms of IMC standard solutions where IMC and mefenamic acid were eluted at 10.00-12.00 min and 19.00-21.00 min, respectively.

Figure 5A showed typical chromatograms of IMC in the phosphate buffer pH 9.0 to induce degradation. Indomethacin in this buffer eluted as two distinct peaks with a retention time of 2.31 and 4.04 min, respectively. These peaks did not interfere with other peaks and were assumed to be peaks of degradation products. It indicated that the degradation product peaks were eluted before indomethacin peak. Thus, this method could be used for the analysis of IMC in phosphate buffer pH 7.4 when solubilized in BCD or in SLS, in the presence of its degradation products and it was not interfered by the buffer components.

Table 4A Within run precision data

| Concentration (mcg/ml) | Peak Area Ratio | | | Mean | SD | %CV |
|---------------------------|-----------------|--------|--------|--------|--------|--------|
| | n1 | n2 | n3 | | | |
| 50.00 | 0.2267 | 0.2272 | 0.2270 | 0.2270 | 0.0003 | 0.1109 |
| 100.00 | 0.4523 | 0.4524 | 0.4506 | 0.4518 | 0.0010 | 0.2239 |
| 150.00 | 0.6730 | 0.6704 | 0.6684 | 0.6706 | 0.0023 | 0.3439 |
| 250.00 | 1.0997 | 1.0980 | 1.0965 | 1.0981 | 0.0016 | 0.1458 |
| 350.00 | 1.4757 | 1.4749 | 1.4696 | 1.4734 | 0.0033 | 0.2250 |

Table 5A Between run precision data

| Concentration (mcg/ml) | Peak Area Ratio | | | Mean | SD | %CV |
|---------------------------|-----------------|--------|--------|--------|--------|--------|
| | Day 1 | Day 2 | Day 3 | | | |
| 50.00 | 0.2395 | 0.2270 | 0.2235 | 0.2300 | 0.0084 | 3.6571 |
| 100.00 | 0.4445 | 0.4518 | 0.4446 | 0.4470 | 0.0042 | 0.9366 |
| 150.00 | 0.6495 | 0.6706 | 0.6512 | 0.6571 | 0.0117 | 1.7839 |
| 250.00 | 1.0595 | 1.0981 | 1.0413 | 1.0663 | 0.0290 | 2.7201 |
| 350.00 | 1.4695 | 1.4734 | 1.3800 | 1.4410 | 0.0528 | 3.6666 |

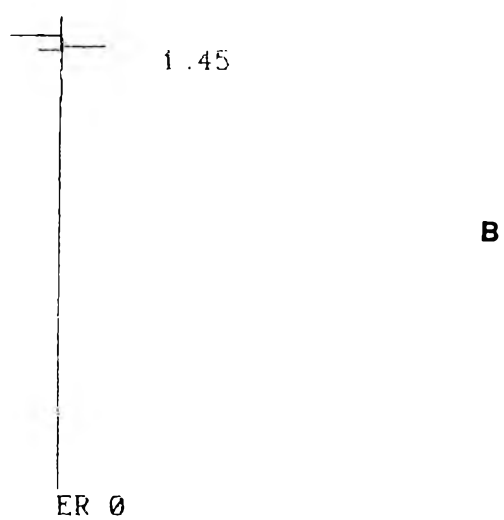
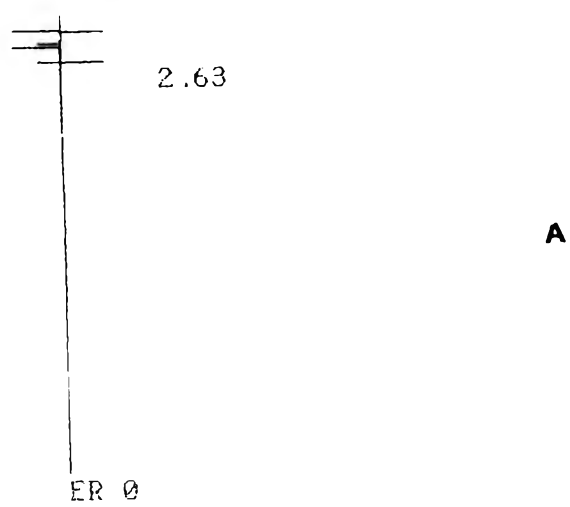


Figure 4A HPLC chromatograms of methanol and blank buffer solution pH 7.4.

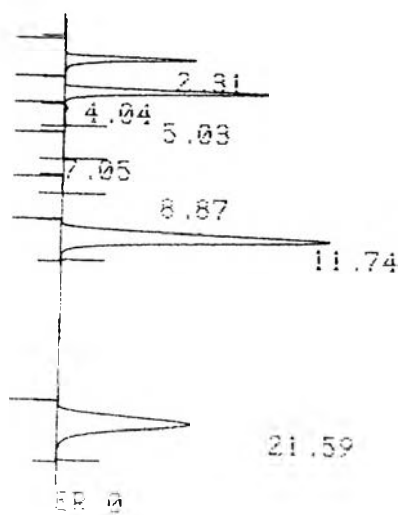


Figure 5A HPLC chromatogram of decomposed drug solutions in phosphate buffer pH 9.0.

4. Linearity

The linearity is usually expressed in terms of the variance around the slope of the regression line calculated according to an established mathematical relationship from test results obtained by the analysis of samples with varying concentrations of analyte (Hutmamn, 1998). Data for the calibration curve of indomethacin in phosphate buffer pH 7.4 are presented in Table 6A. The calibration curve and the HPLC chromatograms of the standard solutions are shown in Figure 8A, 6A and 7A, respectively. Figure 8A shows that the relationship between peak area ratios and indomethacin concentration is linear with correlation coefficient (r) value of 0.9963. These results indicated that the HPLC method was acceptable for quantitative analysis of indomethacin solutions in the range studied.

Table 6A Data for a calibration curve of standard solutions of indomethacin

| Actual concentration (mcg/ml) | Peak Area Ratio | Analytical concentration (mcg/ml) | %Recovery |
|----------------------------------|-----------------|--------------------------------------|-----------|
| 50.00 | 0.2273 | 47.63 | 95.26 |
| 100.00 | 0.4093 | 95.53 | 95.53 |
| 150.00 | 0.6206 | 151.13 | 100.75 |
| 200.00 | 0.8828 | 220.13 | 110.07 |
| 250.00 | 1.0070 | 252.82 | 101.13 |
| 300.00 | 1.1507 | 290.63 | 96.88 |
| 350.00 | 1.3932 | 354.45 | 101.27 |

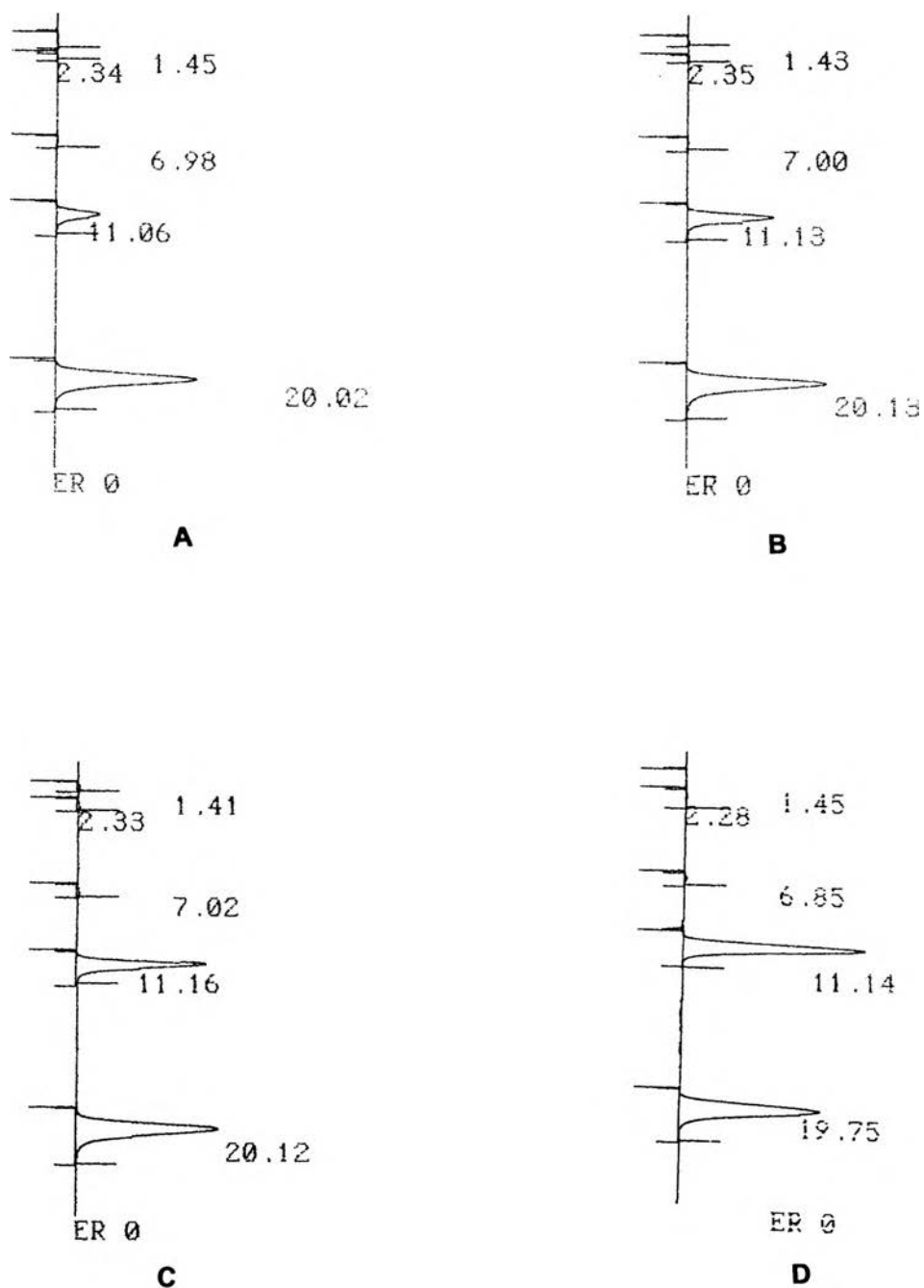


Figure 6A HPLC chromatograms of standard solutions of indomethacin. [50 mcg/ml, (A); 100 mcg/ml, (B); 150 mcg/ml, (C); and 200 mcg/ml, (D)]; retention time of indomethacin and mefenamic acid are at 10.00-12.00 and 19.00-21.00 min, respectively].

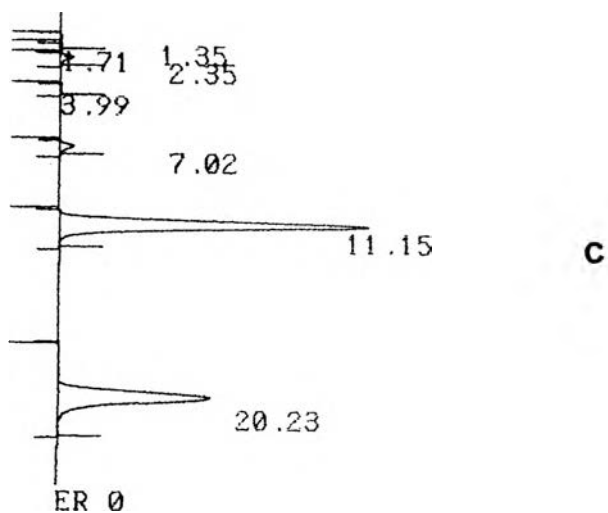
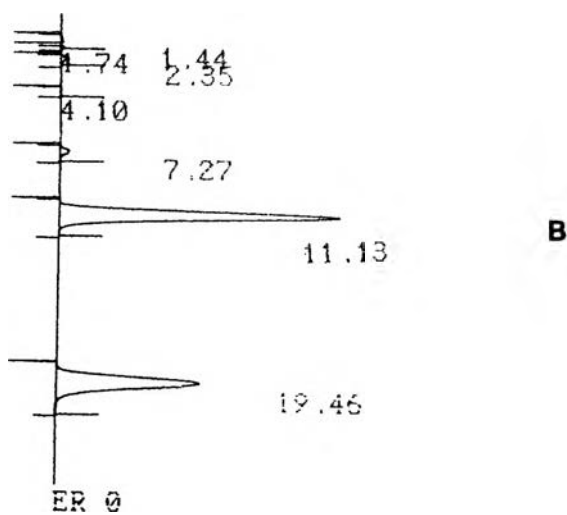
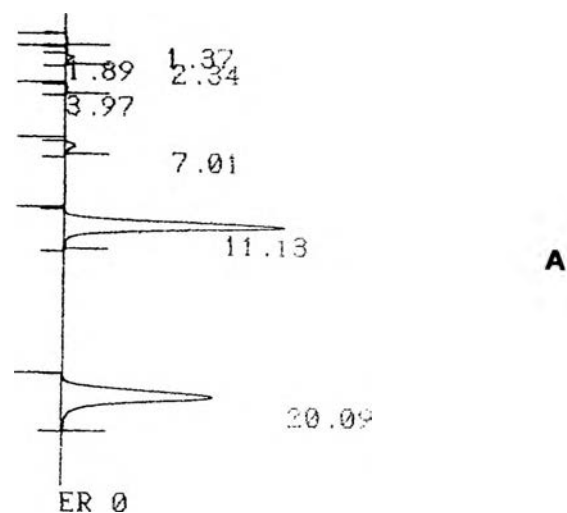
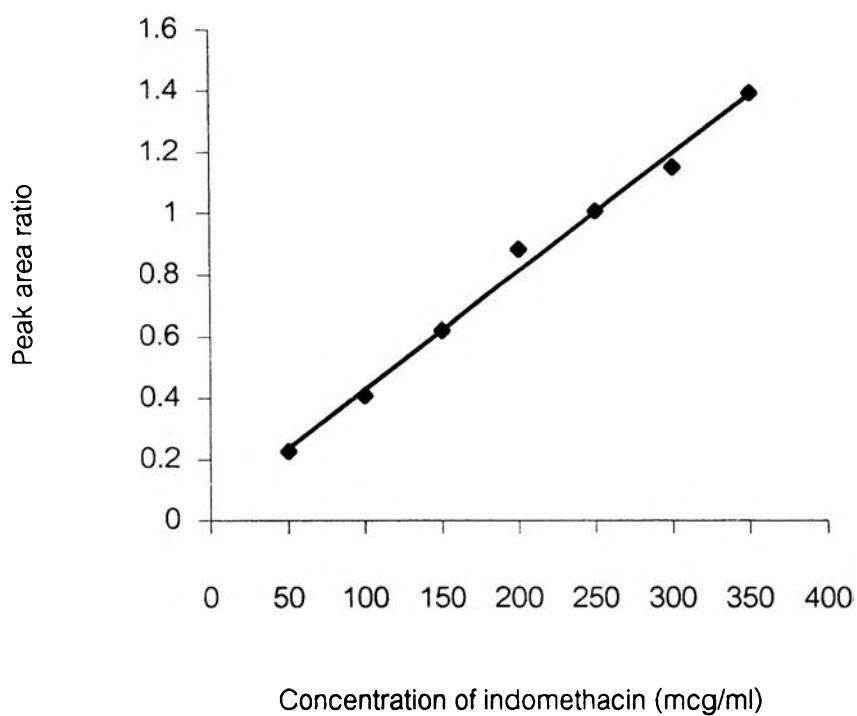


Figure 7A HPLC chromatograms of standard solutions of indomethacin. [250 mcg/ml, (A); 300 mcg/ml, (B) and 350 mcg/ml, (C); retention time of indomethacin and mefenamic acid are at 10.00-12.00 and 19.00-21.00 min, respectively].



$$y = 0.0038x + 0.0463$$

$$r^2 = 0.9927$$

Where

y = Peak Area Ratio

x = Indomethacin concentration (mcg/ml)

Figure 8A A representation of calibration curve of standard solutions of indomethacin

APPENDIX B
CALIBRATION CURVE DATA

Table 1B UV absorbance data of IMC in phosphate buffer pH 7.4 at 319 nm

| Concentration (mcg/ml) | Absorbance |
|------------------------|------------|
| 0 | 0 |
| 10 | 0.196 |
| 15 | 0.297 |
| 20 | 0.39 |
| 25 | 0.486 |
| 30 | 0.588 |

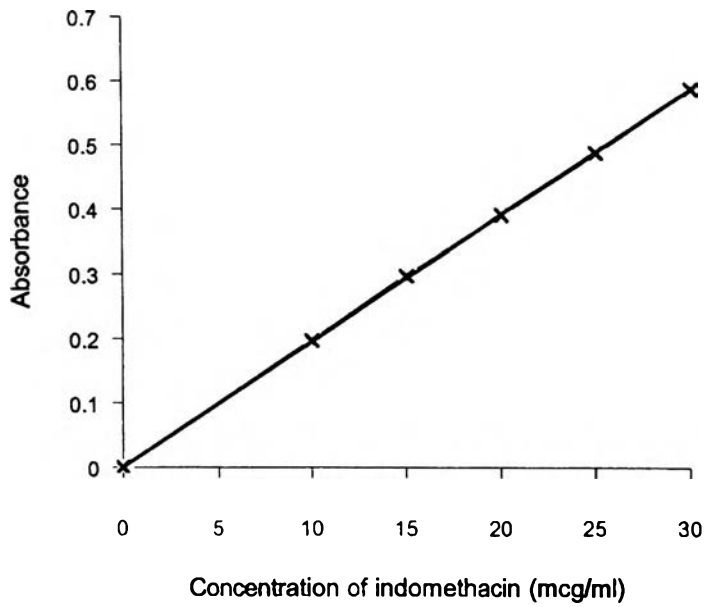


Figure 1B Standard curve of IMC in pH 7.4 phosphate buffer at 319 nm,
Slope = 0.0196 mcg/ml correlation coefficient = 0.9999

APPENDIX C

PARTICLE SIZE DETERMINATION

Table 1C Particle size distribution of Indomethacin

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.11 | 0.11 | 38.38 | 3.23 | 21.09 |
| 0.62 | 0.20 | 0.31 | 44.72 | 3.64 | 24.73 |
| 0.72 | 0.28 | 0.59 | 52.10 | 4.07 | 28.79 |
| 0.84 | 0.29 | 0.88 | 60.69 | 4.54 | 33.34 |
| 0.98 | 0.30 | 1.18 | 70.71 | 5.07 | 38.40 |
| 1.15 | 0.28 | 1.46 | 82.37 | 5.62 | 44.02 |
| 1.34 | 0.25 | 1.71 | 95.97 | 6.19 | 50.21 |
| 1.56 | 0.21 | 1.92 | 111.80 | 6.72 | 56.93 |
| 1.81 | 0.17 | 2.09 | 130.25 | 7.20 | 64.13 |
| 2.11 | 0.13 | 2.23 | 151.73 | 7.63 | 71.76 |
| 2.46 | 0.10 | 2.33 | 176.77 | 7.44 | 79.20 |
| 2.86 | 0.09 | 2.42 | 205.94 | 6.77 | 85.97 |
| 3.34 | 0.09 | 2.51 | 239.92 | 5.67 | 91.65 |
| 3.88 | 0.10 | 2.61 | 279.50 | 4.26 | 95.91 |
| 4.52 | 0.13 | 2.74 | 325.62 | 2.79 | 98.69 |
| 5.27 | 0.17 | 2.91 | 379.35 | 1.31 | 100.00 |
| 6.14 | 0.23 | 3.14 | 441.94 | 0.00 | 100.00 |
| 7.15 | 0.30 | 3.44 | 514.86 | 0.00 | 100.00 |
| 8.34 | 0.40 | 3.84 | 599.81 | 0.00 | 100.00 |
| 9.71 | 0.53 | 4.38 | 698.78 | 0.00 | 100.00 |
| 11.31 | 0.71 | 5.08 | 814.08 | 0.00 | 100.00 |
| 13.18 | 0.92 | 6.00 | | | |
| 15.35 | 1.17 | 7.17 | | | |
| 17.89 | 1.46 | 8.62 | | | |
| 20.84 | 1.78 | 10.40 | | | |
| 24.27 | 2.12 | 12.52 | | | |
| 28.28 | 2.48 | 15.01 | | | |
| 32.95 | 2.85 | 17.86 | | | |

Table 2C Particle size distribution of II10B130

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|-------|-------------|------------------------------|-------|-------------|
| 0.53 | 0.00 | 0.00 | 44.72 | 10.17 | 64.78 |
| 0.62 | 0.00 | 0.00 | 52.10 | 9.66 | 74.44 |
| 0.72 | 0.00 | 0.00 | 60.69 | 8.17 | 82.61 |
| 0.84 | 0.00 | 0.00 | 70.71 | 6.50 | 89.11 |
| 0.98 | 0.00 | 0.00 | 82.37 | 4.87 | 93.99 |
| 1.15 | 0.00 | 0.00 | 95.97 | 3.38 | 97.37 |
| 1.34 | 0.00 | 0.00 | 111.80 | 1.99 | 99.36 |
| 1.56 | 0.00 | 0.00 | 130.25 | 0.61 | 99.97 |
| 1.81 | 0.00 | 0.00 | 151.73 | 0.03 | 100.00 |
| 2.11 | 0.00 | 0.00 | 176.77 | 0.00 | 100.00 |
| 2.46 | 0.00 | 0.00 | 205.94 | 0.00 | 100.00 |
| 2.86 | 0.00 | 0.00 | 239.92 | 0.00 | 100.00 |
| 3.34 | 0.00 | 0.00 | 279.50 | 0.00 | 100.00 |
| 3.88 | 0.00 | 0.00 | 325.62 | 0.00 | 100.00 |
| 4.52 | 0.00 | 0.00 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.00 | 0.00 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.00 | 0.00 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.18 | 0.18 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.31 | 0.49 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.61 | 1.10 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.13 | 2.23 | | | |
| 13.18 | 1.90 | 4.13 | | | |
| 15.35 | 2.99 | 7.12 | | | |
| 17.89 | 4.38 | 11.50 | | | |
| 20.84 | 6.00 | 17.50 | | | |
| 24.27 | 7.65 | 25.15 | | | |
| 28.28 | 9.08 | 34.24 | | | |
| 32.95 | 10.02 | 44.26 | | | |
| 38.38 | 10.36 | 54.62 | | | |

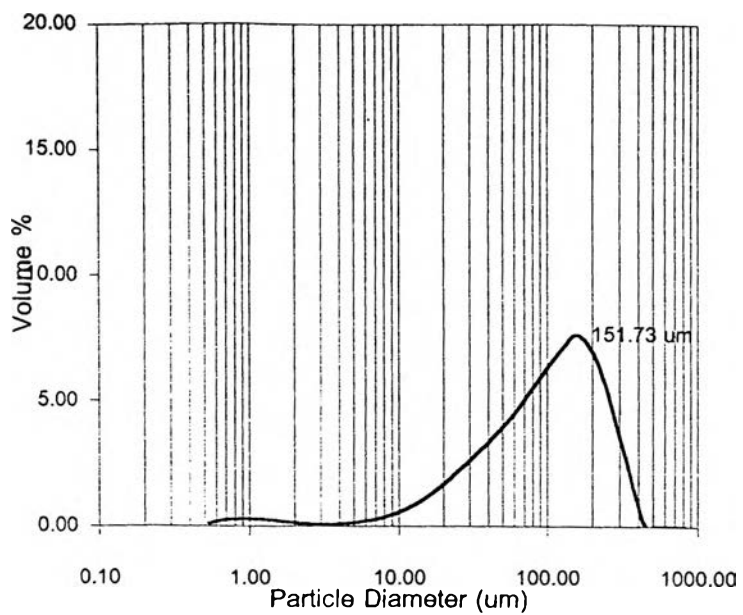


Figure 1C Particle size distribution of indomethacin

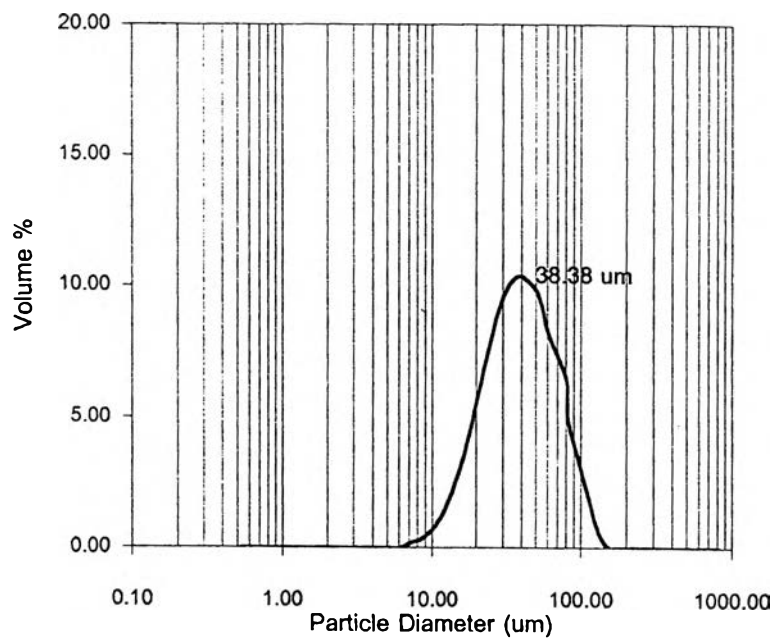


Figure 2C Particle size distribution of II10B130

Table 3C Particle size distribution of II10B140

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|-------|-------------|
| 0.53 | 0.14 | 0.14 | 44.72 | 10.11 | 58.54 |
| 0.62 | 0.26 | 0.39 | 52.10 | 9.90 | 68.43 |
| 0.72 | 0.33 | 0.72 | 60.69 | 8.74 | 77.17 |
| 0.84 | 0.33 | 1.05 | 70.71 | 7.08 | 84.25 |
| 0.98 | 0.31 | 1.37 | 82.37 | 5.42 | 89.67 |
| 1.15 | 0.28 | 1.66 | 95.97 | 3.96 | 93.63 |
| 1.34 | 0.24 | 1.91 | 111.80 | 2.78 | 96.41 |
| 1.56 | 0.20 | 2.12 | 130.25 | 1.82 | 98.22 |
| 1.81 | 0.17 | 2.30 | 151.73 | 1.02 | 99.24 |
| 2.11 | 0.15 | 2.45 | 176.77 | 0.51 | 99.75 |
| 2.46 | 0.14 | 2.59 | 205.94 | 0.21 | 99.96 |
| 2.86 | 0.15 | 2.74 | 239.92 | 0.04 | 100.00 |
| 3.34 | 0.15 | 2.89 | 279.50 | 0.00 | 100.00 |
| 3.88 | 0.15 | 3.04 | 325.62 | 0.00 | 100.00 |
| 4.52 | 0.14 | 3.18 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.12 | 3.30 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.11 | 3.40 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.10 | 3.50 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.19 | 3.69 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.35 | 4.04 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.67 | 4.71 | | | |
| 13.18 | 1.19 | 5.90 | | | |
| 15.35 | 1.99 | 7.90 | | | |
| 17.89 | 3.09 | 10.98 | | | |
| 20.84 | 4.50 | 15.49 | | | |
| 24.27 | 6.13 | 21.62 | | | |
| 28.28 | 7.77 | 29.39 | | | |
| 32.95 | 9.12 | 38.51 | | | |
| 38.38 | 9.91 | 48.42 | | | |

Table 4C Particle size distribution of II10B150

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|-------|-------------|------------------------------|-------|-------------|
| 0.53 | 0.10 | 0.10 | 44.72 | 10.99 | 58.57 |
| 0.62 | 0.18 | 0.28 | 52.10 | 10.30 | 68.87 |
| 0.72 | 0.25 | 0.53 | 60.69 | 8.67 | 77.54 |
| 0.84 | 0.26 | 0.80 | 70.71 | 6.85 | 84.39 |
| 0.98 | 0.27 | 1.07 | 82.37 | 5.13 | 89.52 |
| 1.15 | 0.27 | 1.34 | 95.97 | 3.62 | 93.14 |
| 1.34 | 0.25 | 1.59 | 111.80 | 2.41 | 95.56 |
| 1.56 | 0.24 | 1.82 | 130.25 | 1.56 | 97.11 |
| 1.81 | 0.22 | 2.04 | 151.73 | 0.96 | 98.07 |
| 2.11 | 0.22 | 2.26 | 176.77 | 0.65 | 98.73 |
| 2.46 | 0.23 | 2.49 | 205.94 | 0.42 | 99.15 |
| 2.86 | 0.26 | 2.75 | 239.92 | 0.50 | 99.64 |
| 3.34 | 0.30 | 3.05 | 279.50 | 0.17 | 99.81 |
| 3.88 | 0.33 | 3.39 | 325.62 | 0.12 | 99.93 |
| 4.52 | 0.36 | 3.75 | 379.35 | 0.07 | 100.00 |
| 5.27 | 0.34 | 4.09 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.29 | 4.38 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.23 | 4.62 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.22 | 4.83 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.29 | 5.12 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.50 | 5.62 | | | |
| 13.18 | 0.91 | 6.53 | | | |
| 15.35 | 1.57 | 8.10 | | | |
| 17.89 | 2.52 | 10.62 | | | |
| 20.84 | 3.82 | 14.45 | | | |
| 24.27 | 5.51 | 19.95 | | | |
| 28.28 | 7.48 | 27.44 | | | |
| 32.95 | 9.42 | 36.86 | | | |
| 38.38 | 10.73 | 47.59 | | | |

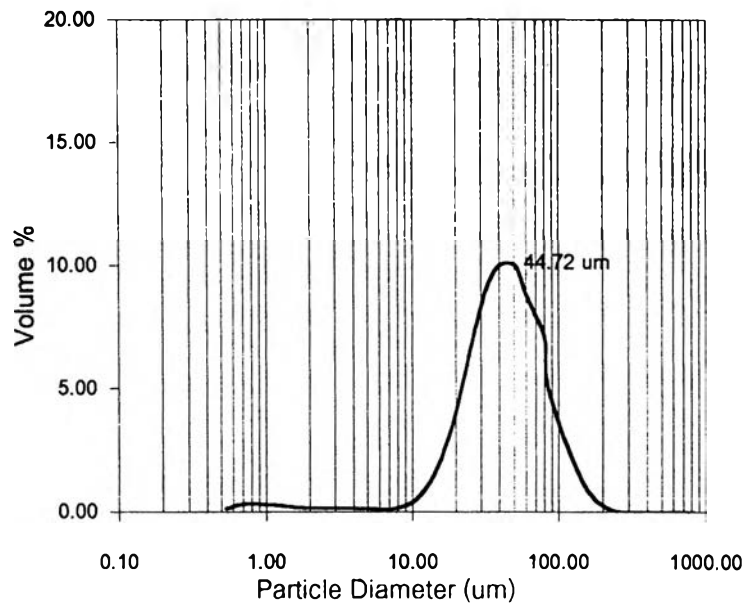


Figure 3C Particle size distribution of II10B140

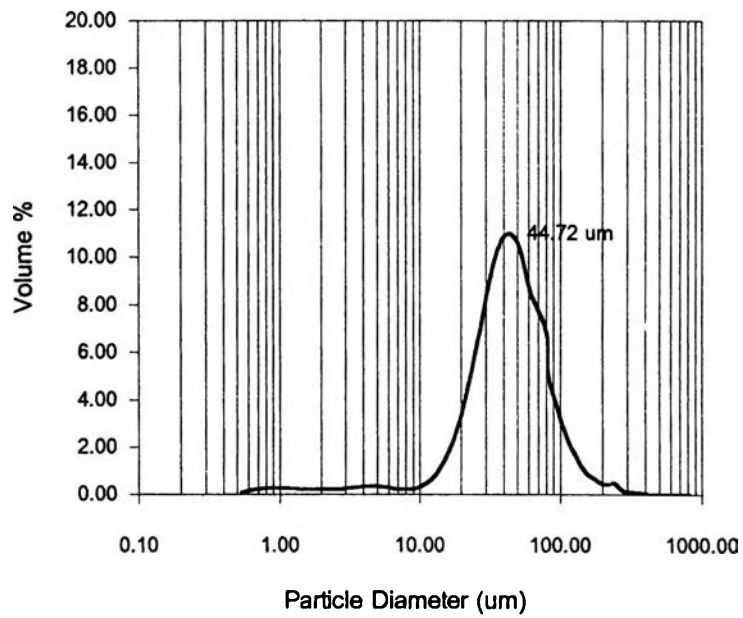


Figure 4C Particle size distribution of II10B150

Table 5C Particle size distribution of II15B130

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.07 | 0.07 | 44.72 | 6.86 | 32.53 |
| 0.62 | 0.12 | 0.19 | 52.10 | 7.80 | 40.33 |
| 0.72 | 0.17 | 0.36 | 60.69 | 8.39 | 48.71 |
| 0.84 | 0.19 | 0.55 | 70.71 | 8.51 | 57.23 |
| 0.98 | 0.20 | 0.76 | 82.37 | 8.23 | 65.46 |
| 1.15 | 0.20 | 0.95 | 95.97 | 7.71 | 73.17 |
| 1.34 | 0.19 | 1.14 | 111.80 | 6.48 | 79.65 |
| 1.56 | 0.16 | 1.31 | 130.25 | 5.28 | 84.93 |
| 1.81 | 0.14 | 1.45 | 151.73 | 4.12 | 89.05 |
| 2.11 | 0.11 | 1.55 | 176.77 | 3.18 | 92.23 |
| 2.46 | 0.09 | 1.64 | 205.94 | 2.46 | 94.69 |
| 2.86 | 0.08 | 1.73 | 239.92 | 1.91 | 96.60 |
| 3.34 | 0.09 | 1.81 | 279.50 | 1.44 | 98.04 |
| 3.88 | 0.11 | 1.92 | 325.62 | 1.02 | 99.07 |
| 4.52 | 0.16 | 2.08 | 379.35 | 0.60 | 99.67 |
| 5.27 | 0.21 | 2.29 | 441.94 | 0.22 | 99.89 |
| 6.14 | 0.27 | 2.56 | 514.86 | 0.11 | 100.00 |
| 7.15 | 0.35 | 2.91 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.42 | 3.33 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.51 | 3.85 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.62 | 4.47 | | | |
| 13.18 | 0.78 | 5.24 | | | |
| 15.35 | 1.01 | 6.25 | | | |
| 17.89 | 1.35 | 7.61 | | | |
| 20.84 | 1.85 | 9.46 | | | |
| 24.27 | 2.54 | 12.00 | | | |
| 28.28 | 3.44 | 15.44 | | | |
| 32.95 | 4.52 | 19.96 | | | |
| 38.38 | 5.71 | 25.67 | | | |

Table 6C Particle size distribution of II15B140

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.06 | 0.06 | 44.72 | 6.92 | 41.99 |
| 0.62 | 0.12 | 0.19 | 52.10 | 7.32 | 49.31 |
| 0.72 | 0.17 | 0.36 | 60.69 | 7.47 | 56.78 |
| 0.84 | 0.20 | 0.55 | 70.71 | 7.35 | 64.12 |
| 0.98 | 0.21 | 0.77 | 82.37 | 7.02 | 71.14 |
| 1.15 | 0.22 | 0.99 | 95.97 | 6.20 | 77.34 |
| 1.34 | 0.22 | 1.20 | 111.80 | 5.16 | 82.50 |
| 1.56 | 0.21 | 1.41 | 130.25 | 4.19 | 86.69 |
| 1.81 | 0.19 | 1.60 | 151.73 | 3.38 | 90.07 |
| 2.11 | 0.16 | 1.76 | 176.77 | 2.80 | 92.88 |
| 2.46 | 0.14 | 1.91 | 205.94 | 2.37 | 95.25 |
| 2.86 | 0.13 | 2.04 | 239.92 | 1.99 | 97.24 |
| 3.34 | 0.12 | 2.17 | 279.50 | 1.52 | 98.75 |
| 3.88 | 0.13 | 2.30 | 325.62 | 0.92 | 99.68 |
| 4.52 | 0.15 | 2.45 | 379.35 | 0.32 | 100.00 |
| 5.27 | 0.19 | 2.64 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.25 | 2.89 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.35 | 3.24 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.50 | 3.75 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.72 | 4.47 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.01 | 5.49 | | | |
| 13.18 | 1.40 | 6.89 | | | |
| 15.35 | 1.89 | 8.79 | | | |
| 17.89 | 2.50 | 11.28 | | | |
| 20.84 | 3.18 | 14.46 | | | |
| 24.27 | 3.95 | 18.41 | | | |
| 28.28 | 4.76 | 23.17 | | | |
| 32.95 | 5.57 | 28.74 | | | |
| 38.38 | 6.32 | 34.06 | | | |

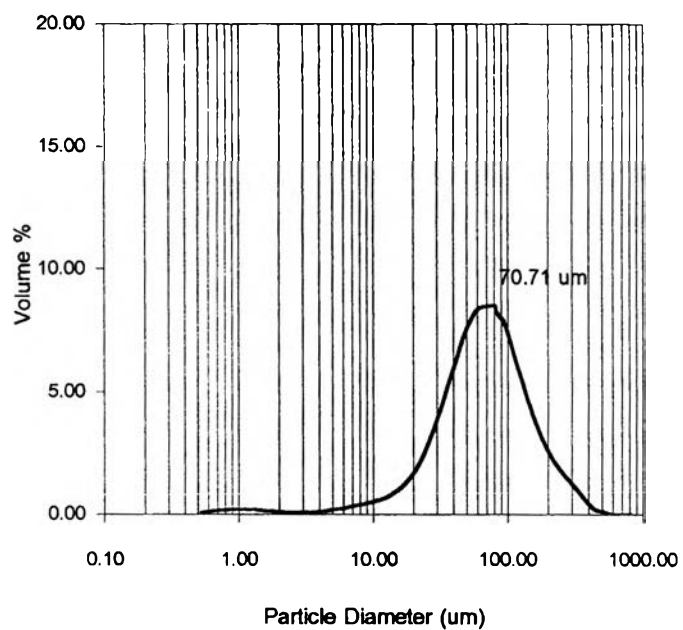


Figure 5C Particle size distribution of II15B130

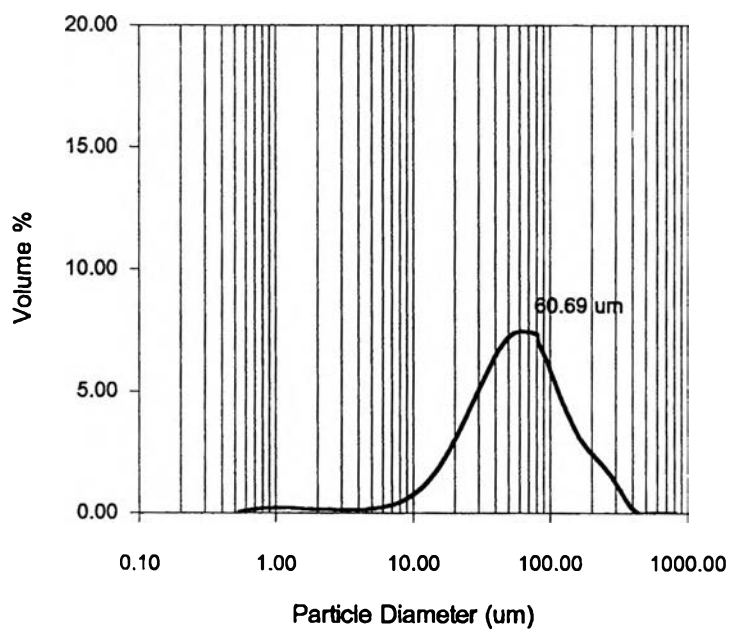


Figure 6C Particle size distribution of II15B140

Table 7C Particle size distribution of II15B150

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.11 | 0.11 | 44.72 | 8.10 | 64.14 |
| 0.62 | 0.21 | 0.32 | 52.10 | 7.59 | 71.73 |
| 0.72 | 0.29 | 0.61 | 60.69 | 6.94 | 78.67 |
| 0.84 | 0.33 | 0.94 | 70.71 | 5.85 | 84.52 |
| 0.98 | 0.36 | 1.30 | 82.37 | 4.73 | 89.25 |
| 1.15 | 0.37 | 1.67 | 95.97 | 3.66 | 92.92 |
| 1.34 | 0.38 | 2.05 | 111.80 | 2.71 | 95.63 |
| 1.56 | 0.37 | 2.42 | 130.25 | 1.91 | 97.54 |
| 1.81 | 0.35 | 2.78 | 151.73 | 1.23 | 98.77 |
| 2.11 | 0.34 | 3.12 | 176.77 | 0.69 | 99.46 |
| 2.46 | 0.33 | 3.45 | 205.94 | 0.35 | 99.82 |
| 2.86 | 0.33 | 3.78 | 239.92 | 0.14 | 99.95 |
| 3.34 | 0.34 | 4.12 | 279.50 | 0.05 | 100.00 |
| 3.88 | 0.35 | 4.47 | 325.62 | 0.00 | 99.92 |
| 4.52 | 0.38 | 4.85 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.41 | 5.25 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.46 | 5.71 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.57 | 6.28 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.77 | 7.05 | 698.78 | 0.00 | 100.00 |
| 9.71 | 1.09 | 8.14 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.59 | 9.73 | | | |
| 13.18 | 2.29 | 12.01 | | | |
| 15.35 | 3.21 | 15.22 | | | |
| 17.89 | 4.33 | 19.56 | | | |
| 20.84 | 5.55 | 25.11 | | | |
| 24.27 | 6.73 | 31.84 | | | |
| 28.28 | 7.65 | 39.49 | | | |
| 32.95 | 8.21 | 47.70 | | | |
| 38.38 | 8.34 | 56.04 | | | |

Table 8C Particle size distribution of I120B130

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.06 | 0.06 | 44.72 | 9.23 | 53.07 |
| 0.62 | 0.12 | 0.18 | 52.10 | 9.19 | 62.26 |
| 0.72 | 0.17 | 0.35 | 60.69 | 8.91 | 71.17 |
| 0.84 | 0.19 | 0.54 | 70.71 | 7.64 | 78.82 |
| 0.98 | 0.21 | 0.75 | 82.37 | 6.15 | 84.97 |
| 1.15 | 0.22 | 0.97 | 95.97 | 4.64 | 89.61 |
| 1.34 | 0.22 | 1.20 | 111.80 | 3.28 | 92.89 |
| 1.56 | 0.22 | 1.42 | 130.25 | 2.19 | 95.08 |
| 1.81 | 0.21 | 1.63 | 151.73 | 1.36 | 96.44 |
| 2.11 | 0.20 | 1.83 | 176.77 | 0.83 | 97.27 |
| 2.46 | 0.19 | 2.03 | 205.94 | 0.55 | 97.82 |
| 2.86 | 0.19 | 2.21 | 239.92 | 0.44 | 98.26 |
| 3.34 | 0.18 | 2.39 | 279.50 | 0.41 | 98.67 |
| 3.88 | 0.16 | 2.55 | 325.62 | 0.41 | 99.08 |
| 4.52 | 0.15 | 2.70 | 379.35 | 0.36 | 99.44 |
| 5.27 | 0.13 | 2.82 | 441.94 | 0.29 | 99.73 |
| 6.14 | 0.12 | 2.94 | 514.86 | 0.19 | 99.92 |
| 7.15 | 0.14 | 3.09 | 599.81 | 0.07 | 99.99 |
| 8.34 | 0.22 | 3.31 | 698.78 | 0.01 | 100.00 |
| 9.71 | 0.40 | 3.71 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.70 | 4.41 | | | |
| 13.18 | 1.20 | 5.61 | | | |
| 15.35 | 1.92 | 7.53 | | | |
| 17.89 | 2.90 | 10.43 | | | |
| 20.84 | 4.12 | 14.55 | | | |
| 24.27 | 5.48 | 20.04 | | | |
| 28.28 | 6.87 | 26.90 | | | |
| 32.95 | 8.06 | 34.96 | | | |
| 38.38 | 8.88 | 43.84 | | | |

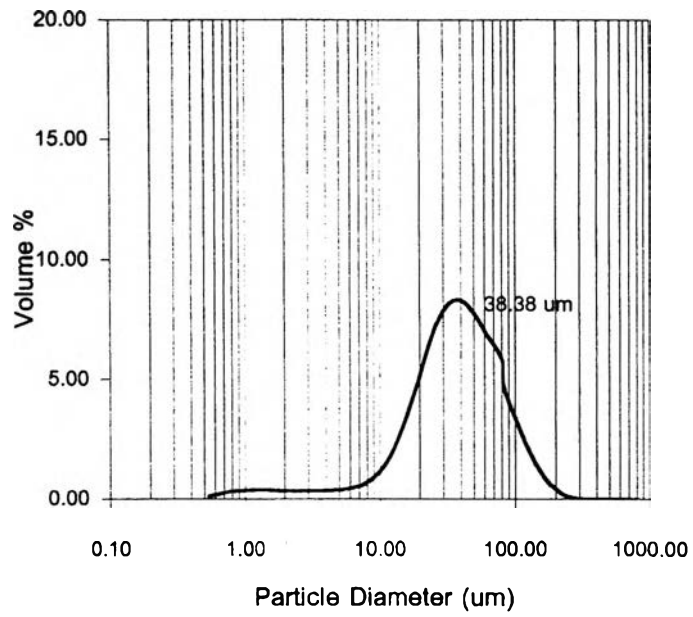


Figure 7C Particle size distribution of II15B150

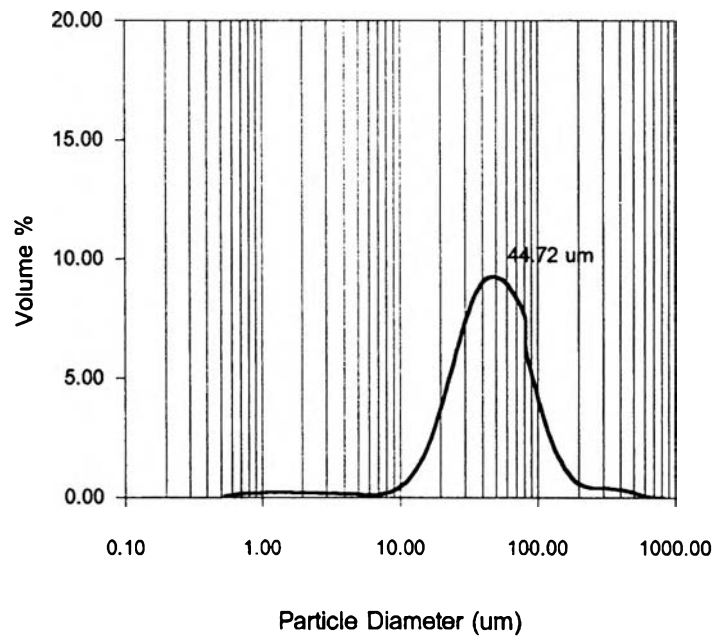


Figure 8C Particle size distribution of II20B130

Table 9C Particle size distribution of I120B140

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.09 | 0.09 | 44.72 | 9.56 | 56.73 |
| 0.62 | 0.17 | 0.26 | 52.10 | 9.06 | 65.79 |
| 0.72 | 0.24 | 0.51 | 60.69 | 7.96 | 73.74 |
| 0.84 | 0.27 | 0.79 | 70.71 | 6.22 | 79.97 |
| 0.98 | 0.30 | 1.08 | 82.37 | 4.55 | 84.52 |
| 1.15 | 0.31 | 1.39 | 95.97 | 3.12 | 87.64 |
| 1.34 | 0.30 | 1.69 | 111.80 | 2.04 | 89.68 |
| 1.56 | 0.29 | 1.98 | 130.25 | 1.36 | 91.05 |
| 1.81 | 0.27 | 2.25 | 151.73 | 1.00 | 92.05 |
| 2.11 | 0.25 | 2.50 | 176.77 | 0.90 | 92.95 |
| 2.46 | 0.22 | 2.72 | 205.94 | 0.95 | 93.90 |
| 2.86 | 0.21 | 2.92 | 239.92 | 1.05 | 94.95 |
| 3.34 | 0.19 | 3.12 | 279.50 | 1.10 | 96.05 |
| 3.88 | 0.18 | 3.30 | 325.62 | 1.07 | 97.12 |
| 4.52 | 0.16 | 3.45 | 379.35 | 0.95 | 98.07 |
| 5.27 | 0.13 | 3.59 | 441.94 | 0.77 | 98.83 |
| 6.14 | 0.12 | 3.70 | 514.86 | 0.58 | 99.41 |
| 7.15 | 0.13 | 3.83 | 599.81 | 0.38 | 99.79 |
| 8.34 | 0.20 | 4.03 | 698.78 | 0.19 | 99.98 |
| 9.71 | 0.37 | 4.40 | 814.08 | 0.02 | 100.00 |
| 11.31 | 0.68 | 5.08 | | | |
| 13.18 | 1.19 | 6.27 | | | |
| 15.35 | 1.95 | 8.22 | | | |
| 17.89 | 3.00 | 11.22 | | | |
| 20.84 | 4.32 | 15.54 | | | |
| 24.27 | 5.86 | 21.39 | | | |
| 28.28 | 7.45 | 28.84 | | | |
| 32.95 | 8.79 | 37.63 | | | |
| 38.38 | 9.54 | 47.17 | | | |

Table 10C Particle size distribution of II20B150

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.1 | 0.10 | 44.72 | 8.54 | 54.72 |
| 0.62 | 0.19 | 0.30 | 52.10 | 8.56 | 63.28 |
| 0.72 | 0.27 | 0.57 | 60.69 | 8.39 | 71.66 |
| 0.84 | 0.29 | 0.85 | 70.71 | 7.38 | 79.04 |
| 0.98 | 0.29 | 1.15 | 82.37 | 6.15 | 85.20 |
| 1.15 | 0.29 | 1.44 | 95.97 | 4.86 | 90.06 |
| 1.34 | 0.26 | 1.70 | 111.80 | 3.64 | 93.69 |
| 1.56 | 0.23 | 1.92 | 130.25 | 2.58 | 96.28 |
| 1.81 | 0.19 | 2.11 | 151.73 | 1.71 | 97.99 |
| 2.11 | 0.15 | 2.27 | 176.77 | 1.06 | 99.05 |
| 2.46 | 0.14 | 2.41 | 205.94 | 0.60 | 99.65 |
| 2.86 | 0.14 | 2.56 | 239.92 | 0.21 | 99.86 |
| 3.34 | 0.17 | 2.73 | 279.50 | 0.08 | 99.94 |
| 3.88 | 0.22 | 2.96 | 325.62 | 0.05 | 99.99 |
| 4.52 | 0.29 | 3.24 | 379.35 | 0.01 | 100.00 |
| 5.27 | 0.37 | 3.62 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.47 | 4.09 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.59 | 4.68 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.74 | 5.42 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.95 | 6.36 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.25 | 7.61 | | | |
| 13.18 | 1.68 | 9.29 | | | |
| 15.35 | 2.29 | 11.57 | | | |
| 17.89 | 3.10 | 14.67 | | | |
| 20.84 | 4.12 | 18.79 | | | |
| 24.27 | 5.28 | 24.07 | | | |
| 28.28 | 6.45 | 30.52 | | | |
| 32.95 | 7.46 | 37.99 | | | |
| 38.38 | 8.19 | 46.17 | | | |

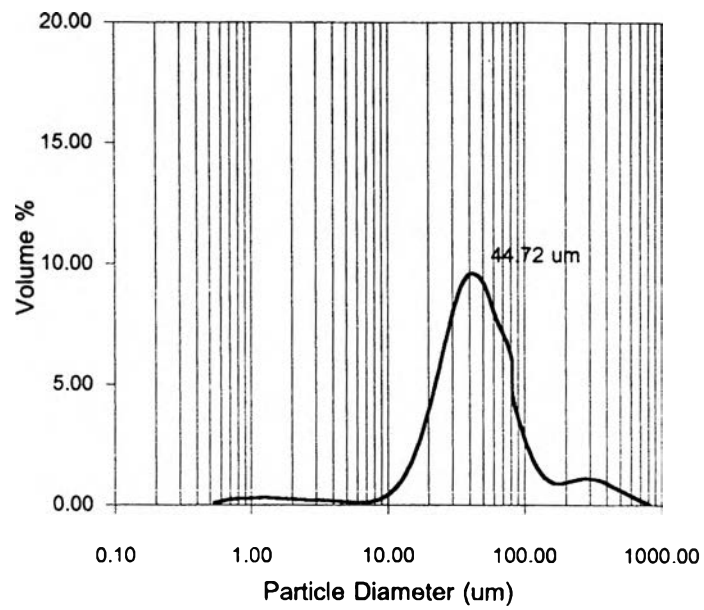


Figure 9C Particle size distribution of II20B140

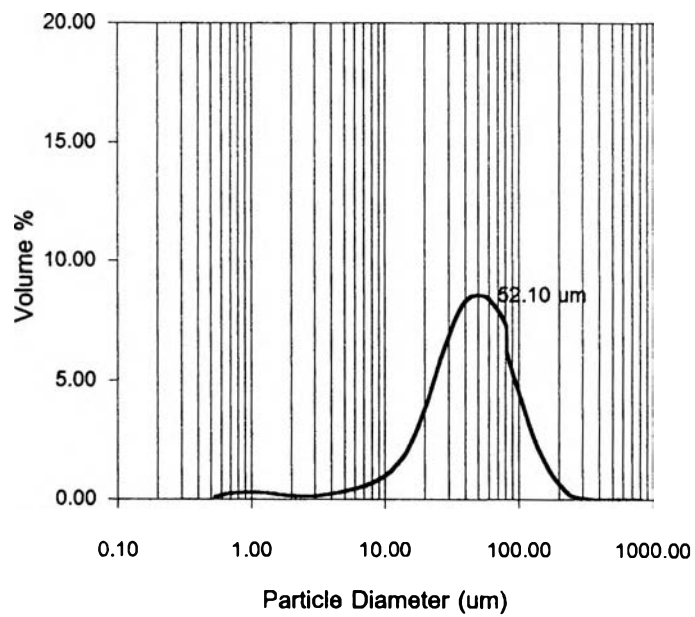


Figure 10C Particle size distribution of II20B150

Table 11C Particle size distribution of I10B130

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|-------|---------|
| 0.53 | 0.09 | 0.09 | 38.38 | 10.08 | 49.44 |
| 0.62 | 0.18 | 0.27 | 44.72 | 10.34 | 59.79 |
| 0.72 | 0.24 | 0.52 | 52.10 | 10.18 | 69.96 |
| 0.84 | 0.27 | 0.78 | 60.69 | 8.48 | 78.44 |
| 0.98 | 0.28 | 1.07 | 70.71 | 6.48 | 84.92 |
| 1.15 | 0.28 | 1.35 | 82.37 | 4.55 | 89.47 |
| 1.34 | 0.28 | 1.63 | 95.97 | 2.94 | 92.41 |
| 1.56 | 0.26 | 1.89 | 111.80 | 1.79 | 94.20 |
| 1.81 | 0.24 | 2.13 | 130.25 | 1.11 | 95.32 |
| 2.11 | 0.23 | 2.36 | 151.73 | 0.79 | 96.11 |
| 2.46 | 0.23 | 2.58 | 176.77 | 0.73 | 96.83 |
| 2.86 | 0.24 | 2.82 | 205.94 | 0.76 | 97.59 |
| 3.34 | 0.26 | 3.08 | 239.92 | 0.77 | 98.36 |
| 3.88 | 0.27 | 3.35 | 279.50 | 0.70 | 99.06 |
| 4.52 | 0.27 | 3.62 | 325.62 | 0.53 | 99.59 |
| 5.27 | 0.26 | 3.88 | 379.35 | 0.32 | 99.91 |
| 6.14 | 0.24 | 4.13 | 441.94 | 0.09 | 100.00 |
| 7.15 | 0.23 | 4.36 | 514.86 | 0.00 | 100.00 |
| 8.34 | 0.27 | 4.63 | 599.81 | 0.00 | 100.00 |
| 9.71 | 0.40 | 5.03 | 698.78 | 0.00 | 100.00 |
| 11.31 | 0.69 | 5.72 | 814.08 | 0.00 | 100.00 |
| 13.18 | 1.19 | 6.91 | | | |
| 15.35 | 1.96 | 8.87 | | | |
| 17.89 | 3.04 | 11.90 | | | |
| 20.84 | 4.44 | 16.34 | | | |
| 24.27 | 6.07 | 22.42 | | | |
| 28.28 | 7.76 | 30.17 | | | |
| 32.95 | 9.19 | 39.36 | | | |

Table 12C Particle size distribution of I10B140

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.12 | 0.12 | 44.72 | 9.40 | 59.64 |
| 0.62 | 0.23 | 0.35 | 52.10 | 9.38 | 69.02 |
| 0.72 | 0.32 | 0.67 | 60.69 | 8.11 | 77.13 |
| 0.84 | 0.35 | 1.01 | 70.71 | 6.49 | 83.62 |
| 0.98 | 0.37 | 1.38 | 82.37 | 4.81 | 88.42 |
| 1.15 | 0.37 | 1.75 | 95.97 | 3.30 | 91.72 |
| 1.34 | 0.36 | 2.11 | 111.80 | 2.13 | 93.85 |
| 1.56 | 0.33 | 2.44 | 130.25 | 1.38 | 95.23 |
| 1.81 | 0.30 | 2.74 | 151.73 | 0.99 | 96.22 |
| 2.11 | 0.27 | 3.01 | 176.77 | 0.86 | 97.07 |
| 2.46 | 0.26 | 3.27 | 205.94 | 0.85 | 97.92 |
| 2.86 | 0.25 | 3.52 | 239.92 | 0.82 | 98.74 |
| 3.34 | 0.26 | 3.78 | 279.50 | 0.68 | 99.42 |
| 3.88 | 0.27 | 4.05 | 325.62 | 0.42 | 99.84 |
| 4.52 | 0.28 | 4.34 | 379.35 | 0.16 | 100.00 |
| 5.27 | 0.30 | 4.64 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.32 | 4.96 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.37 | 5.33 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.48 | 5.81 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.69 | 6.51 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.05 | 7.56 | | | |
| 13.18 | 1.60 | 9.16 | | | |
| 15.35 | 2.37 | 11.53 | | | |
| 17.89 | 3.38 | 14.91 | | | |
| 20.84 | 4.60 | 19.51 | | | |
| 24.27 | 5.95 | 25.46 | | | |
| 28.28 | 7.28 | 32.74 | | | |
| 32.95 | 8.39 | 41.13 | | | |
| 38.38 | 9.11 | 50.23 | | | |

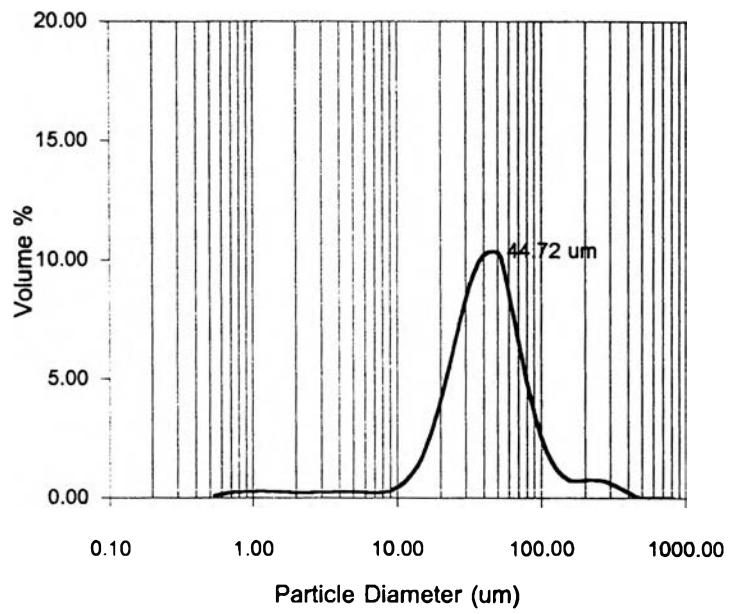


Figure 11C Particle size distribution of I10B130

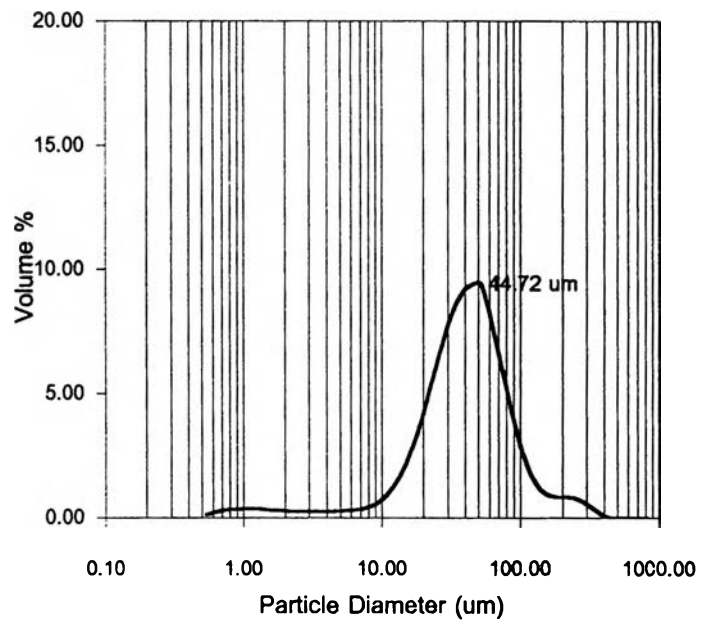


Figure 12C Particle size distribution of I10B140

Table 13C Particle size distribution of I10B150

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|-------|---------|
| 0.53 | 0.09 | 0.09 | 44.72 | 10.56 | 57.28 |
| 0.62 | 0.17 | 0.26 | 52.10 | 10.71 | 67.99 |
| 0.72 | 0.24 | 0.49 | 60.69 | 9.22 | 77.21 |
| 0.84 | 0.26 | 0.75 | 70.71 | 7.26 | 84.47 |
| 0.98 | 0.27 | 1.02 | 82.37 | 5.22 | 89.68 |
| 1.15 | 0.27 | 1.29 | 95.97 | 3.41 | 93.09 |
| 1.34 | 0.26 | 1.55 | 111.80 | 2.01 | 95.10 |
| 1.56 | 0.24 | 1.79 | 130.25 | 1.08 | 96.18 |
| 1.81 | 0.22 | 2.01 | 151.73 | 0.57 | 96.74 |
| 2.11 | 0.21 | 2.22 | 176.77 | 0.41 | 97.15 |
| 2.46 | 0.20 | 2.42 | 205.94 | 0.42 | 97.57 |
| 2.86 | 0.21 | 2.63 | 239.92 | 0.48 | 98.05 |
| 3.34 | 0.23 | 2.86 | 279.50 | 0.53 | 98.57 |
| 3.88 | 0.24 | 3.11 | 325.62 | 0.50 | 99.07 |
| 4.52 | 0.25 | 3.36 | 379.35 | 0.40 | 99.47 |
| 5.27 | 0.25 | 3.61 | 441.94 | 0.25 | 99.72 |
| 6.14 | 0.24 | 3.85 | 514.86 | 0.12 | 99.84 |
| 7.15 | 0.22 | 4.07 | 599.81 | 0.09 | 99.92 |
| 8.34 | 0.25 | 4.32 | 698.78 | 0.05 | 99.98 |
| 9.71 | 0.36 | 4.68 | 814.08 | 0.02 | 100.00 |
| 11.31 | 0.60 | 5.28 | | | |
| 13.18 | 1.04 | 6.32 | | | |
| 15.35 | 1.73 | 8.06 | | | |
| 17.89 | 2.73 | 10.79 | | | |
| 20.84 | 4.06 | 14.85 | | | |
| 24.27 | 5.64 | 20.50 | | | |
| 28.28 | 7.34 | 27.84 | | | |
| 32.95 | 8.89 | 36.73 | | | |
| 38.38 | 9.99 | 46.72 | | | |

Table 14C Particle size distribution of I15B130

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|-------|---------|---------------------|-------|---------|
| 0.53 | 0.00 | 0.00 | 44.72 | 10.34 | 65.13 |
| 0.62 | 0.00 | 0.00 | 52.10 | 10.22 | 75.36 |
| 0.72 | 0.00 | 0.00 | 60.69 | 8.66 | 84.02 |
| 0.84 | 0.00 | 0.00 | 70.71 | 6.65 | 90.66 |
| 0.98 | 0.00 | 0.00 | 82.37 | 4.58 | 95.24 |
| 1.15 | 0.00 | 0.00 | 95.97 | 2.81 | 98.05 |
| 1.34 | 0.00 | 0.00 | 111.80 | 1.44 | 99.50 |
| 1.56 | 0.00 | 0.00 | 130.25 | 0.41 | 99.91 |
| 1.81 | 0.00 | 0.00 | 151.73 | 0.09 | 100.00 |
| 2.11 | 0.00 | 0.00 | 176.77 | 0.00 | 100.00 |
| 2.46 | 0.00 | 0.00 | 205.94 | 0.00 | 100.00 |
| 2.86 | 0.27 | 0.27 | 239.92 | 0.00 | 100.00 |
| 3.34 | 0.25 | 0.51 | 279.50 | 0.00 | 100.00 |
| 3.88 | 0.24 | 0.76 | 325.62 | 0.00 | 100.00 |
| 4.52 | 0.25 | 1.01 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.29 | 1.30 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.35 | 1.66 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.47 | 2.13 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.66 | 2.79 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.96 | 3.75 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.44 | 5.19 | | | |
| 13.18 | 2.12 | 7.31 | | | |
| 15.35 | 3.02 | 10.33 | | | |
| 17.89 | 4.17 | 14.49 | | | |
| 20.84 | 5.50 | 20.00 | | | |
| 24.27 | 6.94 | 26.94 | | | |
| 28.28 | 8.32 | 35.26 | | | |
| 32.95 | 9.42 | 44.69 | | | |
| 38.38 | 10.11 | 54.79 | | | |

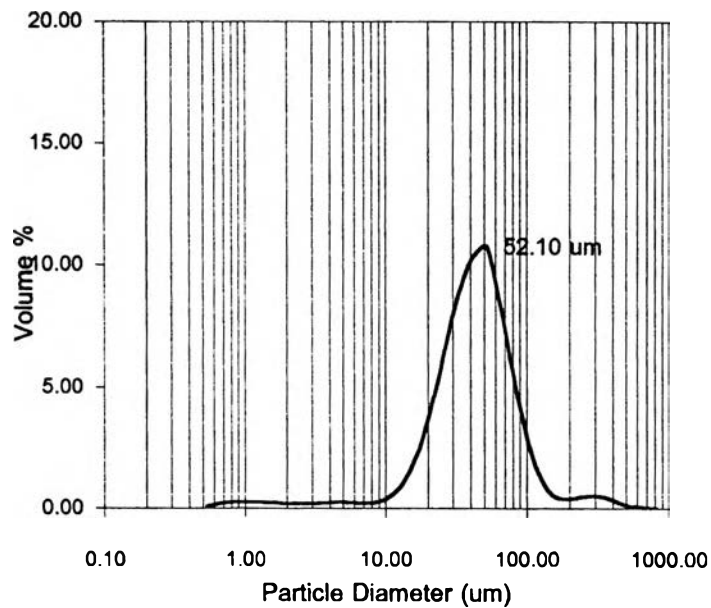


Figure 13C Particle size distribution of I10B150

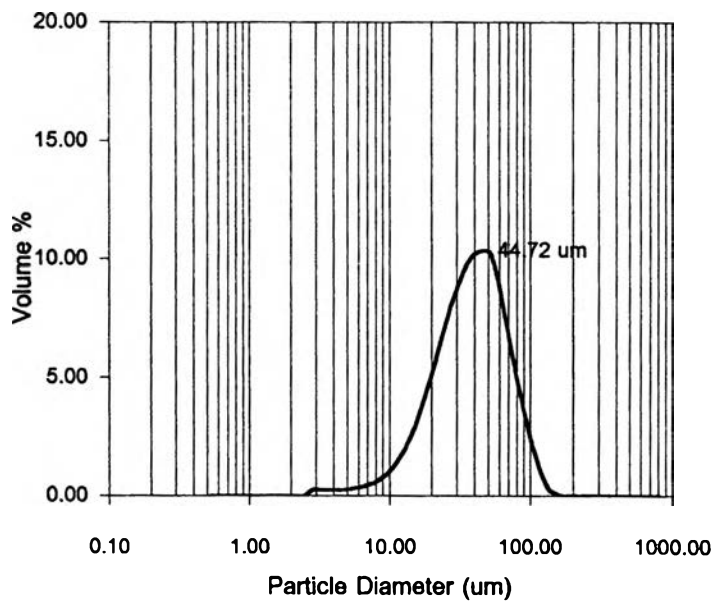


Figure 14C Particle size distribution of I15B130

Table 15C Particle size distribution of I15B140

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.09 | 0.09 | 44.72 | 9.76 | 52.76 |
| 0.62 | 0.17 | 0.27 | 52.10 | 9.81 | 62.57 |
| 0.72 | 0.24 | 0.51 | 60.69 | 9.53 | 72.10 |
| 0.84 | 0.26 | 0.77 | 70.71 | 7.92 | 80.01 |
| 0.98 | 0.27 | 1.04 | 82.37 | 6.05 | 86.06 |
| 1.15 | 0.27 | 1.31 | 95.97 | 4.20 | 90.26 |
| 1.34 | 0.25 | 1.56 | 111.80 | 2.62 | 92.88 |
| 1.56 | 0.22 | 1.78 | 130.25 | 1.45 | 94.33 |
| 1.81 | 0.19 | 1.96 | 151.73 | 0.67 | 95.00 |
| 2.11 | 0.16 | 2.12 | 176.77 | 0.28 | 95.29 |
| 2.46 | 0.14 | 2.27 | 205.94 | 0.20 | 95.49 |
| 2.86 | 0.15 | 2.42 | 239.92 | 0.30 | 95.79 |
| 3.34 | 0.17 | 2.59 | 279.50 | 0.47 | 96.26 |
| 3.88 | 0.21 | 2.79 | 325.62 | 0.63 | 96.89 |
| 4.52 | 0.25 | 3.04 | 379.35 | 0.70 | 97.59 |
| 5.27 | 0.30 | 3.34 | 441.94 | 0.70 | 98.30 |
| 6.14 | 0.34 | 3.68 | 514.86 | 0.63 | 98.93 |
| 7.15 | 0.39 | 4.07 | 599.81 | 0.51 | 99.44 |
| 8.34 | 0.46 | 4.53 | 698.78 | 0.36 | 99.80 |
| 9.71 | 0.58 | 5.11 | 814.08 | 0.20 | 100.00 |
| 11.31 | 0.80 | 5.92 | | | |
| 13.18 | 1.17 | 7.08 | | | |
| 15.35 | 1.70 | 8.79 | | | |
| 17.89 | 2.48 | 11.26 | | | |
| 20.84 | 3.51 | 14.77 | | | |
| 24.27 | 4.82 | 19.60 | | | |
| 28.28 | 6.36 | 25.96 | | | |
| 32.95 | 7.92 | 33.88 | | | |
| 38.38 | 9.13 | 43.01 | | | |

Table 16C Particle size distribution of I15B150

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|-------|---------|---------------------|-------|---------|
| 0.53 | 0.13 | 0.13 | 44.72 | 11.27 | 64.76 |
| 0.62 | 0.24 | 0.37 | 52.10 | 10.14 | 74.90 |
| 0.72 | 0.33 | 0.70 | 60.69 | 8.35 | 83.25 |
| 0.84 | 0.36 | 1.06 | 70.71 | 6.29 | 89.55 |
| 0.98 | 0.38 | 1.43 | 82.37 | 4.32 | 93.86 |
| 1.15 | 0.37 | 1.81 | 95.97 | 2.58 | 96.53 |
| 1.34 | 0.35 | 2.15 | 111.80 | 1.46 | 97.99 |
| 1.56 | 0.31 | 2.46 | 130.25 | 0.70 | 98.69 |
| 1.81 | 0.27 | 2.73 | 151.73 | 0.32 | 99.00 |
| 2.11 | 0.24 | 2.96 | 176.77 | 0.18 | 99.19 |
| 2.46 | 0.22 | 3.18 | 205.94 | 0.18 | 99.37 |
| 2.86 | 0.22 | 3.40 | 239.92 | 0.21 | 99.58 |
| 3.34 | 0.23 | 3.63 | 279.50 | 0.19 | 99.77 |
| 3.88 | 0.26 | 3.89 | 325.62 | 0.13 | 99.90 |
| 4.52 | 0.29 | 4.18 | 379.35 | 0.06 | 99.96 |
| 5.27 | 0.31 | 4.49 | 441.94 | 0.04 | 100.00 |
| 6.14 | 0.32 | 4.81 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.35 | 5.16 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.43 | 5.59 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.60 | 6.19 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.93 | 7.12 | | | |
| 13.18 | 1.46 | 8.58 | | | |
| 15.35 | 2.25 | 10.83 | | | |
| 17.89 | 3.33 | 14.17 | | | |
| 20.84 | 4.71 | 18.88 | | | |
| 24.27 | 6.34 | 25.22 | | | |
| 28.28 | 8.05 | 33.27 | | | |
| 32.95 | 9.57 | 42.84 | | | |
| 38.38 | 10.64 | 53.48 | | | |

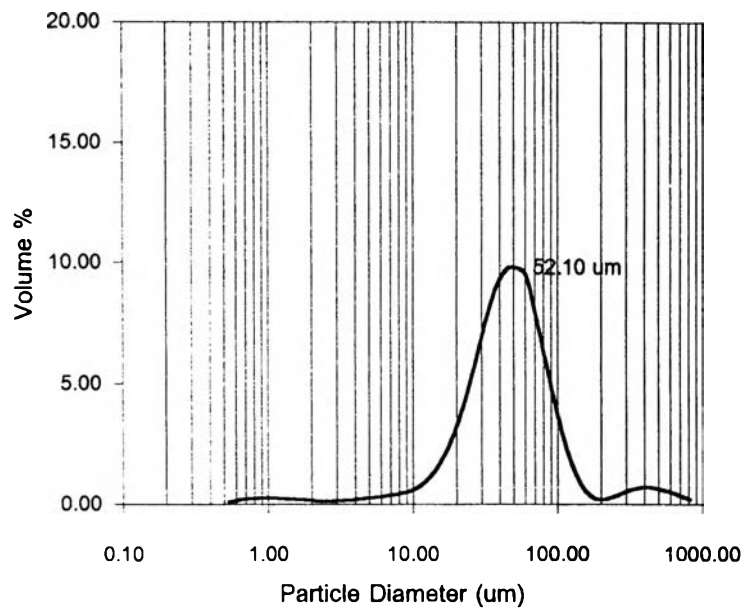


Figure 15C Particle size distribution of I15B140

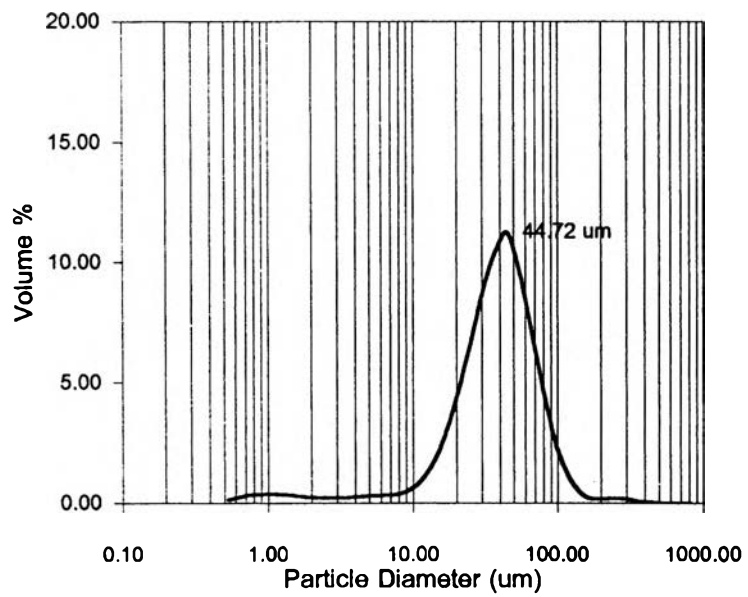


Figure 16C Particle size distribution of I15B150

Table 17C Particle size distribution of Formulation I20B130

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.08 | 0.08 | 44.72 | 6.85 | 57.38 |
| 0.62 | 0.15 | 0.23 | 52.10 | 6.56 | 63.94 |
| 0.72 | 0.21 | 0.45 | 60.69 | 6.12 | 70.06 |
| 0.84 | 0.24 | 0.68 | 70.71 | 5.59 | 75.64 |
| 0.98 | 0.25 | 0.93 | 82.37 | 4.88 | 80.53 |
| 1.15 | 0.26 | 1.19 | 95.97 | 4.19 | 84.72 |
| 1.34 | 0.25 | 1.45 | 111.80 | 3.54 | 88.26 |
| 1.56 | 0.24 | 1.69 | 130.25 | 2.97 | 91.23 |
| 1.81 | 0.22 | 1.91 | 151.73 | 2.44 | 93.66 |
| 2.11 | 0.21 | 2.12 | 176.77 | 1.95 | 95.62 |
| 2.46 | 0.20 | 2.32 | 205.94 | 1.51 | 97.13 |
| 2.86 | 0.21 | 2.54 | 239.92 | 1.11 | 98.24 |
| 3.34 | 0.23 | 2.77 | 279.50 | 0.75 | 98.99 |
| 3.88 | 0.27 | 3.03 | 325.62 | 0.44 | 99.43 |
| 4.52 | 0.33 | 3.37 | 379.35 | 0.27 | 99.70 |
| 5.27 | 0.42 | 3.79 | 441.94 | 0.15 | 99.85 |
| 6.14 | 0.57 | 4.35 | 514.86 | 0.13 | 99.95 |
| 7.15 | 0.77 | 5.12 | 599.81 | 0.05 | 100.00 |
| 8.34 | 1.06 | 6.19 | 698.78 | 0.00 | 100.00 |
| 9.71 | 1.46 | 7.65 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.99 | 9.64 | | | |
| 13.18 | 2.62 | 12.26 | | | |
| 15.35 | 3.36 | 15.62 | | | |
| 17.89 | 4.16 | 19.78 | | | |
| 20.84 | 4.97 | 24.74 | | | |
| 24.27 | 5.73 | 30.47 | | | |
| 28.28 | 6.36 | 36.83 | | | |
| 32.95 | 6.77 | 43.64 | | | |
| 38.38 | 6.93 | 50.53 | | | |

Table 18C Particle size distribution of I20B140

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.11 | 0.11 | 44.72 | 8.35 | 56.32 |
| 0.62 | 0.21 | 0.33 | 52.10 | 8.28 | 64.61 |
| 0.72 | 0.29 | 0.62 | 60.69 | 8.03 | 72.63 |
| 0.84 | 0.30 | 0.92 | 70.71 | 6.94 | 79.57 |
| 0.98 | 0.30 | 1.23 | 82.37 | 5.57 | 85.23 |
| 1.15 | 0.29 | 1.52 | 95.97 | 4.36 | 89.59 |
| 1.34 | 0.27 | 1.79 | 111.80 | 3.20 | 92.79 |
| 1.56 | 0.24 | 2.03 | 130.25 | 2.28 | 95.06 |
| 1.81 | 0.22 | 2.25 | 151.73 | 1.57 | 96.63 |
| 2.11 | 0.20 | 2.45 | 176.77 | 1.09 | 97.71 |
| 2.46 | 0.21 | 2.66 | 205.94 | 0.77 | 98.48 |
| 2.86 | 0.23 | 2.89 | 239.92 | 0.55 | 99.03 |
| 3.34 | 0.26 | 3.15 | 279.50 | 0.37 | 99.40 |
| 3.88 | 0.30 | 3.44 | 325.62 | 0.23 | 99.63 |
| 4.52 | 0.34 | 3.78 | 379.35 | 0.15 | 99.78 |
| 5.27 | 0.39 | 4.17 | 441.94 | 0.11 | 99.89 |
| 6.14 | 0.45 | 4.62 | 514.86 | 0.10 | 99.96 |
| 7.15 | 0.55 | 5.16 | 599.81 | 0.04 | 100.00 |
| 8.34 | 0.71 | 5.87 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.96 | 6.83 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.34 | 8.18 | | | |
| 13.18 | 1.87 | 10.05 | | | |
| 15.35 | 2.56 | 12.61 | | | |
| 17.89 | 3.40 | 16.00 | | | |
| 20.84 | 4.39 | 20.40 | | | |
| 24.27 | 5.47 | 25.87 | | | |
| 28.28 | 6.55 | 32.42 | | | |
| 32.95 | 7.47 | 39.88 | | | |
| 38.38 | 8.09 | 47.98 | | | |

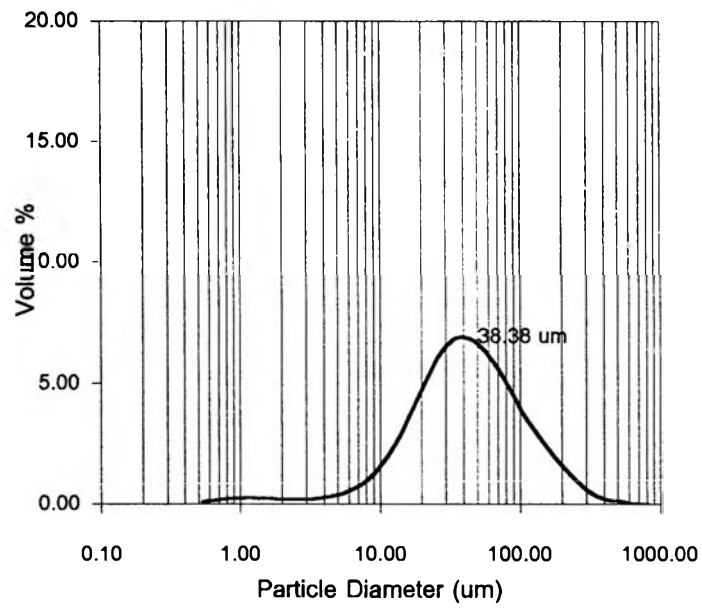


Figure 17C Particle size distribution of I20B130

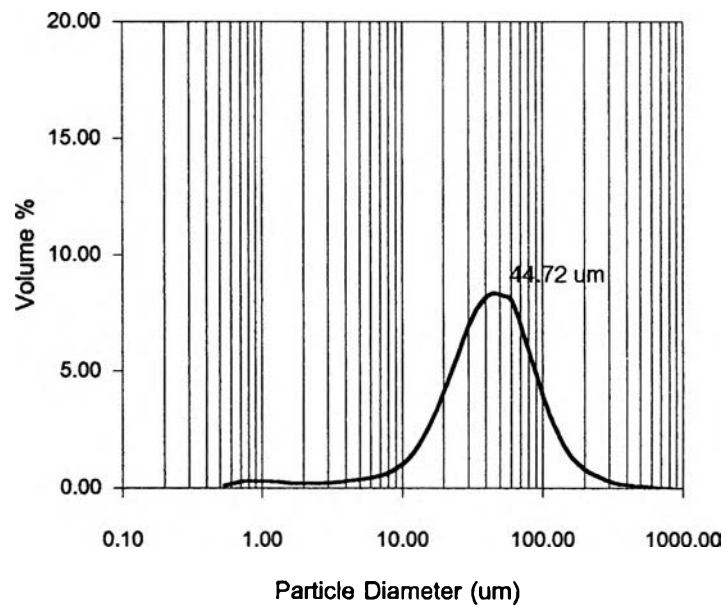


Figure 18C Particle size distribution of I20B140

Table 19C Particle size distribution of I20B150

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.11 | 0.11 | 44.72 | 7.69 | 60.46 |
| 0.62 | 0.21 | 0.32 | 52.10 | 7.18 | 67.63 |
| 0.72 | 0.28 | 0.61 | 60.69 | 6.51 | 74.14 |
| 0.84 | 0.30 | 0.92 | 70.71 | 5.32 | 79.46 |
| 0.98 | 0.32 | 1.23 | 82.37 | 4.13 | 83.59 |
| 1.15 | 0.31 | 1.54 | 95.97 | 3.09 | 86.68 |
| 1.34 | 0.30 | 1.84 | 111.80 | 2.28 | 88.96 |
| 1.56 | 0.27 | 2.11 | 130.25 | 1.74 | 90.70 |
| 1.81 | 0.25 | 2.36 | 151.73 | 1.40 | 92.10 |
| 2.11 | 0.23 | 2.58 | 176.77 | 1.24 | 93.34 |
| 2.46 | 0.22 | 2.81 | 205.94 | 1.16 | 94.49 |
| 2.86 | 0.23 | 3.04 | 239.92 | 1.10 | 95.59 |
| 3.34 | 0.25 | 3.28 | 279.50 | 1.02 | 96.61 |
| 3.88 | 0.27 | 3.55 | 325.62 | 0.90 | 97.51 |
| 4.52 | 0.30 | 3.85 | 379.35 | 0.74 | 98.25 |
| 5.27 | 0.35 | 4.20 | 441.94 | 0.58 | 98.83 |
| 6.14 | 0.43 | 4.63 | 514.86 | 0.42 | 99.25 |
| 7.15 | 0.57 | 5.20 | 599.81 | 0.31 | 99.56 |
| 8.34 | 0.80 | 6.00 | 698.78 | 0.27 | 99.83 |
| 9.71 | 1.15 | 7.15 | 814.08 | 0.17 | 100.00 |
| 11.31 | 1.67 | 8.81 | | | |
| 13.18 | 2.35 | 11.16 | | | |
| 15.35 | 3.20 | 14.35 | | | |
| 17.89 | 4.18 | 18.53 | | | |
| 20.84 | 5.23 | 23.76 | | | |
| 24.27 | 6.25 | 30.01 | | | |
| 28.28 | 7.13 | 37.14 | | | |
| 32.95 | 7.72 | 44.86 | | | |
| 38.38 | 7.90 | 52.77 | | | |

Table 20C Particle size distribution of I10BB130

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|-------|---------|---------------------|-------|---------|
| 0.53 | 0 | 0.00 | 44.72 | 11.52 | 66.38 |
| 0.62 | 0.00 | 0.00 | 52.10 | 11.26 | 77.64 |
| 0.72 | 0.00 | 0.00 | 60.69 | 9.07 | 86.71 |
| 0.84 | 0.00 | 0.00 | 70.71 | 6.60 | 93.32 |
| 0.98 | 0.00 | 0.00 | 82.37 | 4.31 | 97.62 |
| 1.15 | 0.00 | 0.00 | 95.97 | 2.21 | 99.83 |
| 1.34 | 0.00 | 0.00 | 111.80 | 0.17 | 100.00 |
| 1.56 | 0.00 | 0.00 | 130.25 | 0.00 | 100.00 |
| 1.81 | 0.00 | 0.00 | 151.73 | 0.00 | 100.00 |
| 2.11 | 0.00 | 0.00 | 176.77 | 0.00 | 100.00 |
| 2.46 | 0.31 | 0.31 | 205.94 | 0.00 | 100.00 |
| 2.86 | 0.29 | 0.60 | 239.92 | 0.00 | 100.00 |
| 3.34 | 0.30 | 0.90 | 279.50 | 0.00 | 100.00 |
| 3.88 | 0.30 | 1.20 | 325.62 | 0.00 | 100.00 |
| 4.52 | 0.32 | 1.52 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.36 | 1.88 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.40 | 2.27 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.46 | 2.74 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.58 | 3.31 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.77 | 4.09 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.12 | 5.21 | | | |
| 13.18 | 1.67 | 6.88 | | | |
| 15.35 | 2.48 | 9.36 | | | |
| 17.89 | 3.63 | 12.99 | | | |
| 20.84 | 5.10 | 18.08 | | | |
| 24.27 | 6.82 | 24.91 | | | |
| 28.28 | 8.61 | 33.51 | | | |
| 32.95 | 10.16 | 43.67 | | | |
| 38.38 | 11.19 | 54.86 | | | |

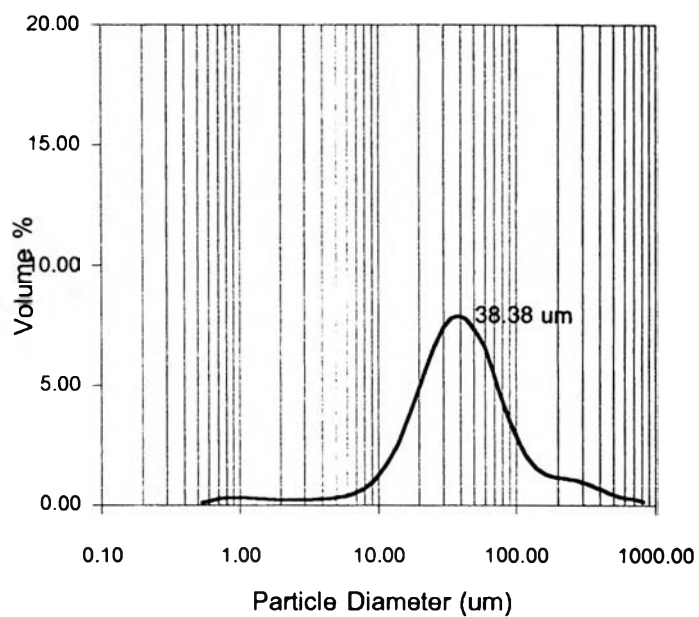


Figure 19C Particle size distribution of I20B150

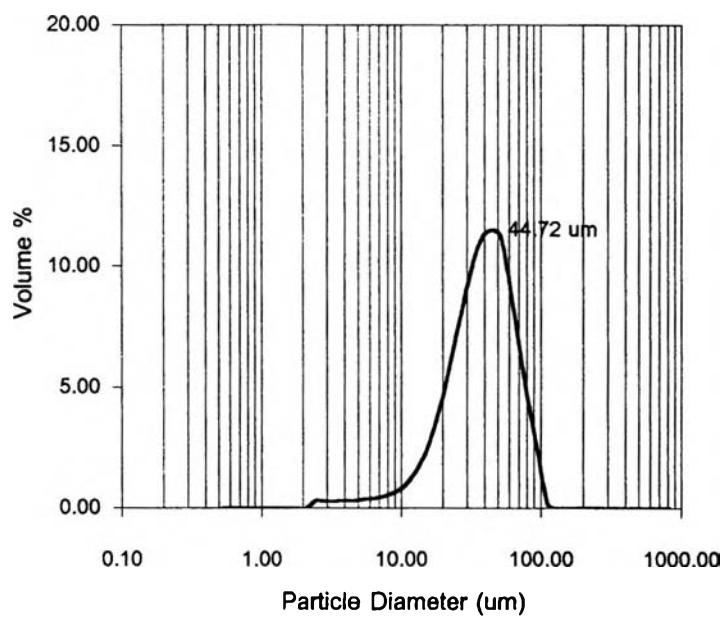


Figure 20C Particle size distribution of I10BB130

Table 21C Particle size distribution of I10BB140

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|-------|---------|
| 0.53 | 0.00 | 0.00 | 44.72 | 9.00 | 42.41 |
| 0.62 | 0.00 | 0.00 | 52.10 | 9.74 | 52.15 |
| 0.72 | 0.00 | 0.00 | 60.69 | 10.02 | 62.17 |
| 0.84 | 0.00 | 0.00 | 70.71 | 9.94 | 72.11 |
| 0.98 | 0.00 | 0.00 | 82.37 | 8.50 | 80.61 |
| 1.15 | 0.00 | 0.00 | 95.97 | 6.70 | 87.31 |
| 1.34 | 0.00 | 0.00 | 111.80 | 4.88 | 92.19 |
| 1.56 | 0.00 | 0.00 | 130.25 | 3.33 | 95.53 |
| 1.81 | 0.00 | 0.00 | 151.73 | 2.19 | 97.71 |
| 2.11 | 0.00 | 0.00 | 176.77 | 1.19 | 98.90 |
| 2.46 | 0.00 | 0.00 | 205.94 | 0.41 | 99.31 |
| 2.86 | 0.24 | 0.24 | 239.92 | 0.34 | 99.65 |
| 3.34 | 0.23 | 0.47 | 279.50 | 0.23 | 99.88 |
| 3.88 | 0.24 | 0.71 | 325.62 | 0.12 | 100.00 |
| 4.52 | 0.27 | 0.98 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.30 | 1.28 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.33 | 1.61 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.37 | 1.98 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.43 | 2.41 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.52 | 2.92 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.67 | 3.59 | | | |
| 13.18 | 0.92 | 4.51 | | | |
| 15.35 | 1.31 | 5.82 | | | |
| 17.89 | 1.89 | 7.70 | | | |
| 20.84 | 2.69 | 10.39 | | | |
| 24.27 | 3.74 | 14.13 | | | |
| 28.28 | 5.01 | 19.14 | | | |
| 32.95 | 6.43 | 25.58 | | | |
| 38.38 | 7.83 | 33.41 | | | |

Table 22C Particle size distribution of I10BB150

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.05 | 0.05 | 44.72 | 7.76 | 37.63 |
| 0.62 | 0.09 | 0.14 | 52.10 | 8.73 | 46.35 |
| 0.72 | 0.13 | 0.27 | 60.69 | 9.43 | 55.79 |
| 0.84 | 0.15 | 0.41 | 70.71 | 9.90 | 65.68 |
| 0.98 | 0.16 | 0.57 | 82.37 | 8.99 | 74.67 |
| 1.15 | 0.17 | 0.74 | 95.97 | 7.50 | 82.17 |
| 1.34 | 0.17 | 0.90 | 111.80 | 5.75 | 87.92 |
| 1.56 | 0.16 | 1.06 | 130.25 | 4.06 | 91.99 |
| 1.81 | 0.15 | 1.22 | 151.73 | 2.59 | 94.57 |
| 2.11 | 0.14 | 1.36 | 176.77 | 1.48 | 96.06 |
| 2.46 | 0.14 | 1.50 | 205.94 | 0.80 | 96.85 |
| 2.86 | 0.15 | 1.65 | 239.92 | 0.46 | 97.31 |
| 3.34 | 0.16 | 1.81 | 279.50 | 0.36 | 97.67 |
| 3.88 | 0.19 | 2.00 | 325.62 | 0.38 | 98.05 |
| 4.52 | 0.24 | 2.24 | 379.35 | 0.42 | 98.48 |
| 5.27 | 0.29 | 2.52 | 441.94 | 0.43 | 98.91 |
| 6.14 | 0.35 | 2.87 | 514.86 | 0.39 | 99.30 |
| 7.15 | 0.42 | 3.29 | 599.81 | 0.32 | 99.62 |
| 8.34 | 0.50 | 3.78 | 698.78 | 0.25 | 99.86 |
| 9.71 | 0.59 | 4.37 | 814.08 | 0.14 | 100.00 |
| 11.31 | 0.71 | 5.09 | | | |
| 13.18 | 0.90 | 5.99 | | | |
| 15.35 | 1.18 | 7.18 | | | |
| 17.89 | 1.61 | 8.78 | | | |
| 20.84 | 2.21 | 10.99 | | | |
| 24.27 | 3.02 | 14.01 | | | |
| 28.28 | 4.05 | 18.06 | | | |
| 32.95 | 5.27 | 23.33 | | | |
| 38.38 | 6.55 | 29.87 | | | |

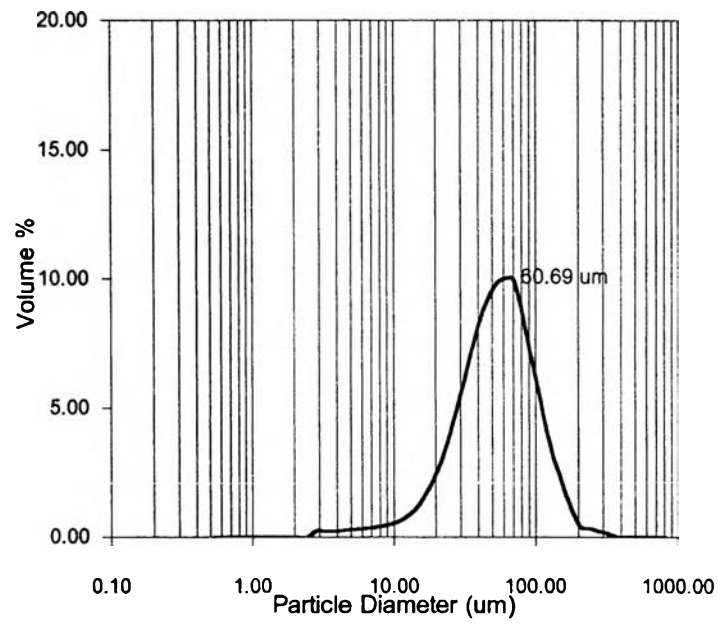


Figure 21C Particle size distribution of I10BB140

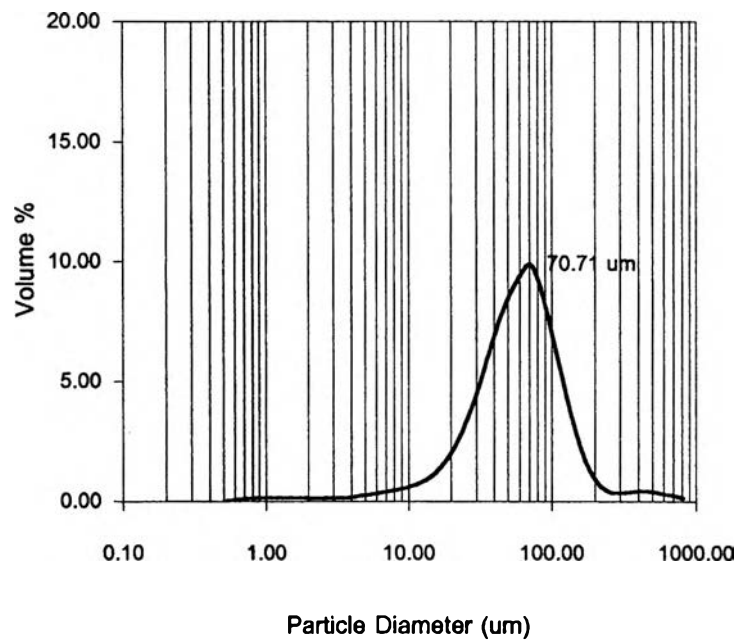


Figure 22C Particle size distribution of I10BB150

Table 23C Particle size distribution of I15BB130

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.06 | 0.06 | 44.72 | 8.70 | 49.28 |
| 0.62 | 0.11 | 0.17 | 52.10 | 9.28 | 58.56 |
| 0.72 | 0.15 | 0.32 | 60.69 | 9.67 | 68.23 |
| 0.84 | 0.17 | 0.49 | 70.71 | 8.85 | 77.08 |
| 0.98 | 0.19 | 0.67 | 82.37 | 7.45 | 84.54 |
| 1.15 | 0.19 | 0.86 | 95.97 | 5.71 | 90.24 |
| 1.34 | 0.19 | 1.05 | 111.80 | 3.90 | 94.15 |
| 1.56 | 0.18 | 1.22 | 130.25 | 2.30 | 96.45 |
| 1.81 | 0.17 | 1.39 | 151.73 | 1.02 | 97.46 |
| 2.11 | 0.16 | 1.56 | 176.77 | 0.17 | 97.63 |
| 2.46 | 0.17 | 1.73 | 205.94 | 0.00 | 97.63 |
| 2.8C | 0.18 | 1.90 | 239.92 | 0.00 | 97.63 |
| 3.34 | 0.20 | 2.11 | 279.50 | 0.02 | 97.65 |
| 3.88 | 0.24 | 2.35 | 325.62 | 0.10 | 97.75 |
| 4.52 | 0.29 | 2.64 | 379.35 | 0.25 | 98.00 |
| 5.27 | 0.36 | 3.00 | 441.94 | 0.36 | 98.35 |
| 6.14 | 0.44 | 3.44 | 514.86 | 0.41 | 98.77 |
| 7.15 | 0.55 | 3.98 | 599.81 | 0.45 | 99.21 |
| 8.34 | 0.69 | 4.67 | 698.78 | 0.45 | 99.66 |
| 9.71 | 0.87 | 5.54 | 814.08 | 0.34 | 100.00 |
| 11.31 | 1.13 | 6.67 | | | |
| 13.18 | 1.49 | 8.16 | | | |
| 15.35 | 1.97 | 10.13 | | | |
| 17.89 | 2.60 | 12.73 | | | |
| 20.84 | 3.40 | 16.13 | | | |
| 24.27 | 4.39 | 20.51 | | | |
| 28.28 | 5.53 | 26.04 | | | |
| 32.95 | 6.72 | 32.76 | | | |
| 38.38 | 7.82 | 40.59 | | | |

Table 24C Particle size distribution of I15B140

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.07 | 0.07 | 44.72 | 8.86 | 50.94 |
| 0.62 | 0.13 | 0.20 | 52.10 | 9.30 | 60.24 |
| 0.72 | 0.18 | 0.38 | 60.69 | 9.51 | 69.75 |
| 0.84 | 0.20 | 0.59 | 70.71 | 8.54 | 78.28 |
| 0.98 | 0.22 | 0.81 | 82.37 | 7.12 | 85.40 |
| 1.15 | 0.23 | 1.03 | 95.97 | 5.46 | 90.86 |
| 1.34 | 0.22 | 1.26 | 111.80 | 3.80 | 94.66 |
| 1.56 | 0.21 | 1.47 | 130.25 | 2.36 | 97.01 |
| 1.81 | 0.20 | 1.66 | 151.73 | 1.24 | 98.26 |
| 2.11 | 0.18 | 1.85 | 176.77 | 0.52 | 98.78 |
| 2.46 | 0.18 | 2.02 | 205.94 | 0.16 | 98.94 |
| 2.86 | 0.19 | 2.21 | 239.92 | 0.08 | 99.02 |
| 3.34 | 0.21 | 2.42 | 279.50 | 0.13 | 99.16 |
| 3.88 | 0.24 | 2.66 | 325.62 | 0.21 | 99.36 |
| 4.52 | 0.29 | 2.95 | 379.35 | 0.23 | 99.60 |
| 5.27 | 0.36 | 3.32 | 441.94 | 0.19 | 99.78 |
| 6.14 | 0.44 | 3.76 | 514.86 | 0.11 | 99.89 |
| 7.15 | 0.55 | 4.31 | 599.81 | 0.06 | 99.95 |
| 8.34 | 0.68 | 4.99 | 698.78 | 0.03 | 99.98 |
| 9.71 | 0.88 | 5.87 | 814.08 | 0.02 | 100.00 |
| 11.31 | 1.14 | 7.01 | | | |
| 13.18 | 1.51 | 8.52 | | | |
| 15.35 | 2.01 | 10.54 | | | |
| 17.89 | 2.68 | 13.21 | | | |
| 20.84 | 3.53 | 16.74 | | | |
| 24.27 | 4.56 | 21.30 | | | |
| 28.28 | 5.74 | 27.04 | | | |
| 32.95 | 6.97 | 34.01 | | | |
| 38.38 | 8.06 | 42.08 | | | |

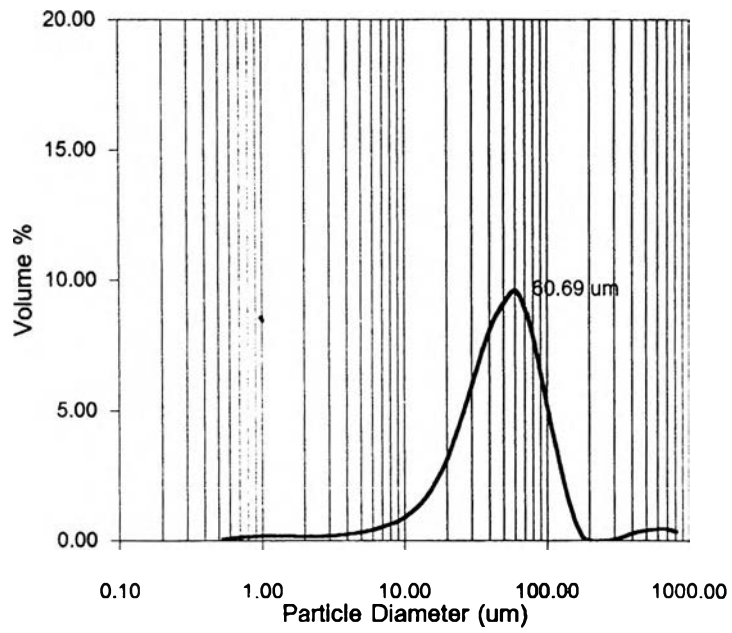


Figure 23C Particle size distribution of I15BB130

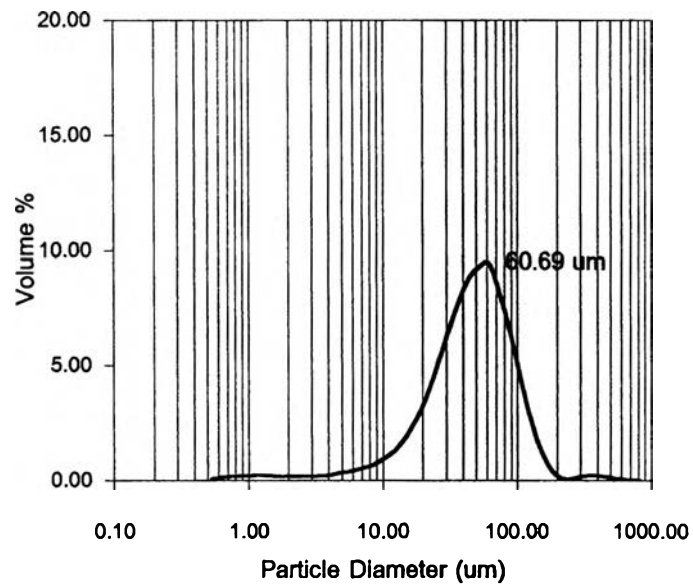


Figure 24C Particle size distribution of I15BB140

Table 25C Particle size distribution of I15B150

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.07 | 0.07 | 44.72 | 9.36 | 55.78 |
| 0.62 | 0.13 | 0.19 | 52.10 | 9.57 | 65.35 |
| 0.72 | 0.18 | 0.37 | 60.69 | 8.85 | 74.20 |
| 0.84 | 0.19 | 0.57 | 70.71 | 7.46 | 81.66 |
| 0.98 | 0.21 | 0.77 | 82.37 | 5.84 | 87.50 |
| 1.15 | 0.21 | 0.99 | 95.97 | 4.24 | 91.74 |
| 1.34 | 0.21 | 1.19 | 111.80 | 2.86 | 94.60 |
| 1.56 | 0.20 | 1.39 | 130.25 | 1.82 | 96.42 |
| 1.81 | 0.19 | 1.58 | 151.73 | 1.13 | 97.55 |
| 2.11 | 0.18 | 1.76 | 176.77 | 0.73 | 98.28 |
| 2.46 | 0.19 | 1.95 | 205.94 | 0.55 | 98.83 |
| 2.86 | 0.20 | 2.15 | 239.92 | 0.45 | 99.28 |
| 3.34 | 0.23 | 2.38 | 279.50 | 0.36 | 99.64 |
| 3.88 | 0.26 | 2.65 | 325.62 | 0.24 | 99.87 |
| 4.52 | 0.31 | 2.95 | 379.35 | 0.09 | 99.96 |
| 5.27 | 0.35 | 3.31 | 441.94 | 0.03 | 99.99 |
| 6.14 | 0.41 | 3.72 | 514.86 | 0.01 | 100.00 |
| 7.15 | 0.49 | 4.21 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.62 | 4.83 | 698.78 | 0.00 | 100.00 |
| 9.71 | 0.82 | 5.65 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.13 | 6.78 | | | |
| 13.18 | 1.59 | 8.37 | | | |
| 15.35 | 2.23 | 10.59 | | | |
| 17.89 | 3.07 | 13.66 | | | |
| 20.84 | 4.11 | 17.76 | | | |
| 24.27 | 5.32 | 23.09 | | | |
| 28.28 | 6.64 | 29.73 | | | |
| 32.95 | 7.87 | 37.61 | | | |
| 38.38 | 8.82 | 46.42 | | | |

Table 26C Particle size distribution of I20BB130

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.05 | 0.05 | 44.72 | 7.66 | 39.49 |
| 0.62 | 0.10 | 0.15 | 52.10 | 8.41 | 47.90 |
| 0.72 | 0.14 | 0.29 | 60.69 | 8.89 | 56.79 |
| 0.84 | 0.17 | 0.47 | 70.71 | 9.17 | 65.96 |
| 0.98 | 0.20 | 0.67 | 82.37 | 8.36 | 74.33 |
| 1.15 | 0.22 | 0.89 | 95.97 | 7.09 | 81.42 |
| 1.34 | 0.23 | 1.13 | 111.80 | 5.60 | 87.02 |
| 1.56 | 0.23 | 1.37 | 130.25 | 4.14 | 91.16 |
| 1.81 | 0.23 | 1.59 | 151.73 | 2.84 | 94.00 |
| 2.11 | 0.21 | 1.80 | 176.77 | 1.83 | 95.83 |
| 2.46 | 0.19 | 2.00 | 205.94 | 1.15 | 96.98 |
| 2.86 | 0.18 | 2.17 | 239.92 | 0.77 | 97.75 |
| 3.34 | 0.16 | 2.34 | 279.50 | 0.57 | 98.33 |
| 3.88 | 0.16 | 2.50 | 325.62 | 0.45 | 98.78 |
| 4.52 | 0.18 | 2.68 | 379.35 | 0.34 | 99.12 |
| 5.27 | 0.21 | 2.89 | 441.94 | 0.30 | 99.42 |
| 6.14 | 0.25 | 3.14 | 514.86 | 0.27 | 99.66 |
| 7.15 | 0.32 | 3.45 | 599.81 | 0.16 | 99.82 |
| 8.34 | 0.41 | 3.87 | 698.78 | 0.12 | 99.93 |
| 9.71 | 0.54 | 4.41 | 814.08 | 0.07 | 100.00 |
| 11.31 | 0.73 | 5.14 | | | |
| 13.18 | 1.00 | 6.14 | | | |
| 15.35 | 1.36 | 7.51 | | | |
| 17.89 | 1.86 | 9.37 | | | |
| 20.84 | 2.52 | 11.89 | | | |
| 24.27 | 3.36 | 15.24 | | | |
| 28.28 | 4.38 | 19.63 | | | |
| 32.95 | 5.53 | 25.16 | | | |
| 38.38 | 6.67 | 31.83 | | | |

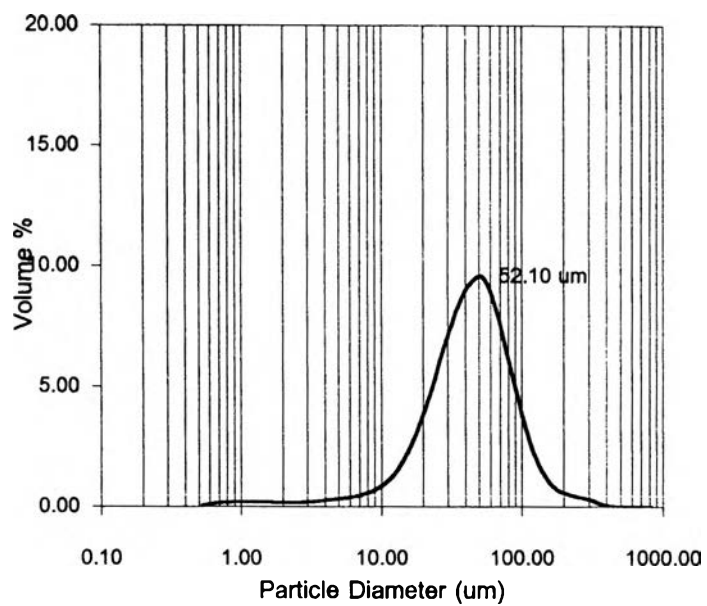


Figure 25C Particle size distribution of I15BB150

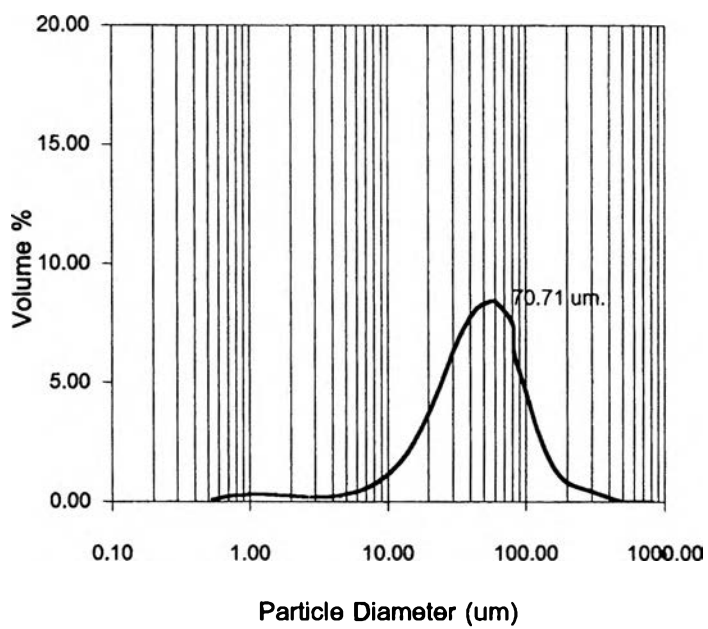


Figure 26C Particle size distribution of I20BB130

Table 27C Particle size distribution of I20BB140

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.09 | 0.09 | 44.72 | 8.15 | 53.28 |
| 0.62 | 0.17 | 0.26 | 52.10 | 8.36 | 61.64 |
| 0.72 | 0.25 | 0.51 | 60.69 | 8.40 | 70.04 |
| 0.84 | 0.28 | 0.79 | 70.71 | 7.49 | 77.53 |
| 0.98 | 0.31 | 1.10 | 82.37 | 6.25 | 83.78 |
| 1.15 | 0.32 | 1.42 | 95.97 | 4.88 | 88.66 |
| 1.34 | 0.32 | 1.74 | 111.80 | 3.57 | 92.23 |
| 1.56 | 0.30 | 2.05 | 130.25 | 2.47 | 94.70 |
| 1.81 | 0.28 | 2.32 | 151.73 | 1.63 | 96.33 |
| 2.11 | 0.25 | 2.57 | 176.77 | 1.09 | 97.43 |
| 2.46 | 0.22 | 2.80 | 205.94 | 0.78 | 98.20 |
| 2.86 | 0.21 | 3.01 | 239.92 | 0.62 | 98.82 |
| 3.34 | 0.21 | 3.22 | 279.50 | 0.49 | 99.31 |
| 3.88 | 0.23 | 3.46 | 325.62 | 0.37 | 99.68 |
| 4.52 | 0.28 | 3.74 | 379.35 | 0.23 | 99.91 |
| 5.27 | 0.35 | 4.09 | 441.94 | 0.09 | 100.00 |
| 6.14 | 0.46 | 4.55 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.61 | 5.16 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.81 | 5.98 | 698.78 | 0.00 | 100.00 |
| 9.71 | 1.09 | 7.06 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.44 | 8.51 | | | |
| 13.18 | 1.89 | 10.40 | | | |
| 15.35 | 2.45 | 12.85 | | | |
| 17.89 | 3.13 | 15.99 | | | |
| 20.84 | 3.95 | 19.93 | | | |
| 24.27 | 4.87 | 24.80 | | | |
| 28.28 | 5.87 | 30.66 | | | |
| 32.95 | 6.84 | 37.50 | | | |
| 38.38 | 7.63 | 45.13 | | | |

Table 28C Particle size distribution of I20BB150

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.11 | 0.11 | 44.72 | 7.11 | 39.88 |
| 0.62 | 0.21 | 0.32 | 52.10 | 7.89 | 47.76 |
| 0.72 | 0.29 | 0.61 | 60.69 | 8.44 | 56.20 |
| 0.84 | 0.31 | 0.91 | 70.71 | 8.79 | 64.99 |
| 0.98 | 0.32 | 1.23 | 82.37 | 8.35 | 73.34 |
| 1.15 | 0.32 | 1.55 | 95.97 | 7.24 | 80.58 |
| 1.34 | 0.29 | 1.85 | 111.80 | 5.83 | 86.41 |
| 1.56 | 0.26 | 2.10 | 130.25 | 4.34 | 90.75 |
| 1.81 | 0.22 | 2.33 | 151.73 | 2.97 | 93.72 |
| 2.11 | 0.19 | 2.51 | 176.77 | 1.89 | 95.62 |
| 2.46 | 0.17 | 2.69 | 205.94 | 1.17 | 96.78 |
| 2.86 | 0.18 | 2.87 | 239.92 | 0.75 | 97.54 |
| 3.34 | 0.20 | 3.07 | 279.50 | 0.58 | 98.11 |
| 3.88 | 0.25 | 3.32 | 325.62 | 0.51 | 98.62 |
| 4.52 | 0.31 | 3.63 | 379.35 | 0.46 | 99.08 |
| 5.27 | 0.39 | 4.03 | 441.94 | 0.38 | 99.47 |
| 6.14 | 0.48 | 4.51 | 514.86 | 0.28 | 99.75 |
| 7.15 | 0.57 | 5.07 | 599.81 | 0.18 | 99.93 |
| 8.34 | 0.67 | 5.74 | 698.78 | 0.07 | 100.00 |
| 9.71 | 0.78 | 6.52 | 814.08 | 0.00 | 100.00 |
| 11.31 | 0.93 | 7.45 | | | |
| 13.18 | 1.13 | 8.59 | | | |
| 15.35 | 1.43 | 10.01 | | | |
| 17.89 | 1.85 | 11.86 | | | |
| 20.84 | 2.42 | 14.28 | | | |
| 24.27 | 3.17 | 17.45 | | | |
| 28.28 | 4.07 | 21.53 | | | |
| 32.95 | 5.09 | 26.62 | | | |
| 38.38 | 6.14 | 32.76 | | | |

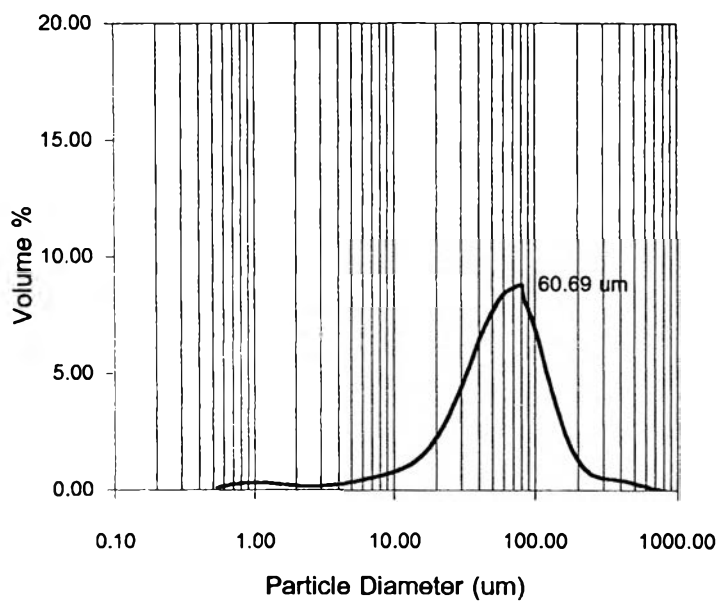


Figure 27C Particle size distribution of I20BB140

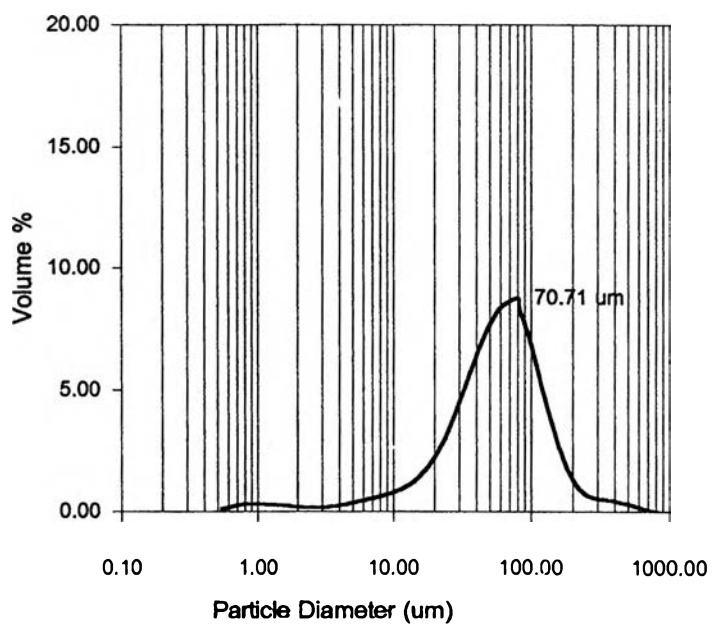


Figure 28C Particle size distribution of I20BB150

Table 29C Particle size distribution of IS13

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.20 | 0.20 | 44.72 | 4.26 | 84.64 |
| 0.62 | 0.39 | 0.60 | 52.10 | 2.97 | 87.62 |
| 0.72 | 0.55 | 1.15 | 60.69 | 2.01 | 89.62 |
| 0.84 | 0.60 | 1.74 | 70.71 | 1.36 | 90.99 |
| 0.98 | 0.63 | 2.38 | 82.37 | 1.02 | 92.01 |
| 1.15 | 0.63 | 3.01 | 95.97 | 0.90 | 92.91 |
| 1.34 | 0.59 | 3.60 | 111.80 | 0.90 | 93.81 |
| 1.56 | 0.51 | 4.11 | 130.25 | 0.93 | 94.74 |
| 1.81 | 0.42 | 4.53 | 151.73 | 0.94 | 95.68 |
| 2.11 | 0.33 | 4.86 | 176.77 | 0.90 | 96.57 |
| 2.46 | 0.25 | 5.11 | 205.94 | 0.81 | 97.39 |
| 2.86 | 0.20 | 5.31 | 239.92 | 0.71 | 98.09 |
| 3.34 | 0.19 | 5.50 | 279.50 | 0.59 | 98.68 |
| 3.88 | 0.23 | 5.74 | 325.62 | 0.48 | 99.16 |
| 4.52 | 0.37 | 6.10 | 379.35 | 0.36 | 99.52 |
| 5.27 | 0.61 | 6.72 | 441.94 | 0.25 | 99.76 |
| 6.14 | 1.02 | 7.74 | 514.86 | 0.17 | 100.00 |
| 7.15 | 1.61 | 9.34 | 599.81 | 0.06 | 100.00 |
| 8.34 | 2.41 | 11.76 | 698.78 | 0.00 | 100.00 |
| 9.71 | 3.45 | 15.21 | 814.08 | 0.00 | 100.00 |
| 11.31 | 4.72 | 19.93 | | | |
| 13.18 | 6.10 | 26.03 | | | |
| 15.35 | 7.38 | 33.41 | | | |
| 17.89 | 8.32 | 41.74 | | | |
| 20.84 | 8.75 | 50.49 | | | |
| 24.27 | 8.67 | 59.16 | | | |
| 28.28 | 8.23 | 67.39 | | | |
| 32.95 | 7.26 | 74.65 | | | |
| 38.38 | 5.74 | 80.39 | | | |

Table 30C Particle size distribution of IS20

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.33 | 0.33 | 44.72 | 4.07 | 86.86 |
| 0.62 | 0.62 | 0.94 | 52.10 | 2.82 | 89.67 |
| 0.72 | 0.82 | 1.77 | 60.69 | 1.81 | 91.48 |
| 0.84 | 0.85 | 2.62 | 70.71 | 1.08 | 92.56 |
| 0.98 | 0.84 | 3.46 | 82.37 | 0.64 | 93.20 |
| 1.15 | 0.79 | 4.25 | 95.97 | 0.42 | 93.62 |
| 1.34 | 0.68 | 4.93 | 111.80 | 0.37 | 93.98 |
| 1.56 | 0.55 | 5.48 | 130.25 | 0.40 | 94.39 |
| 1.81 | 0.43 | 5.91 | 151.73 | 0.46 | 94.86 |
| 2.11 | 0.33 | 6.24 | 176.77 | 0.53 | 95.39 |
| 2.46 | 0.27 | 6.51 | 205.94 | 0.58 | 95.97 |
| 2.86 | 0.26 | 6.76 | 239.92 | 0.62 | 96.59 |
| 3.34 | 0.30 | 7.06 | 279.50 | 0.64 | 97.23 |
| 3.88 | 0.39 | 7.44 | 325.62 | 0.63 | 97.86 |
| 4.52 | 0.58 | 8.03 | 379.35 | 0.59 | 98.45 |
| 5.27 | 0.89 | 8.91 | 441.94 | 0.52 | 98.97 |
| 6.14 | 1.33 | 10.25 | 514.86 | 0.43 | 99.40 |
| 7.15 | 1.94 | 12.19 | 599.81 | 0.32 | 99.72 |
| 8.34 | 2.75 | 14.94 | 698.78 | 0.20 | 99.93 |
| 9.71 | 3.76 | 18.70 | 814.08 | 0.07 | 100.00 |
| 11.31 | 4.98 | 23.68 | | | |
| 13.18 | 6.26 | 29.94 | | | |
| 15.35 | 7.41 | 37.35 | | | |
| 17.89 | 8.19 | 45.53 | | | |
| 20.84 | 8.48 | 54.01 | | | |
| 24.27 | 8.38 | 62.39 | | | |
| 28.28 | 8.07 | 70.45 | | | |
| 32.95 | 6.86 | 77.32 | | | |
| 38.38 | 5.47 | 82.78 | | | |

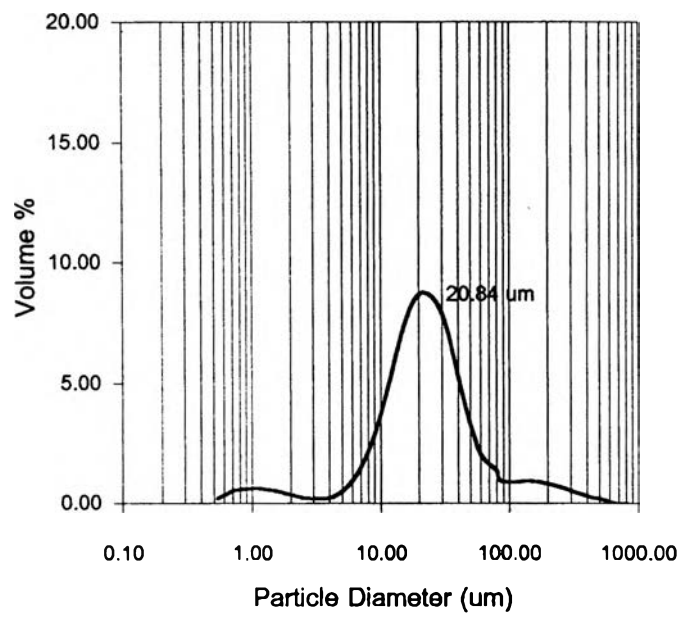


Figure 29C Particle size distribution of IS13

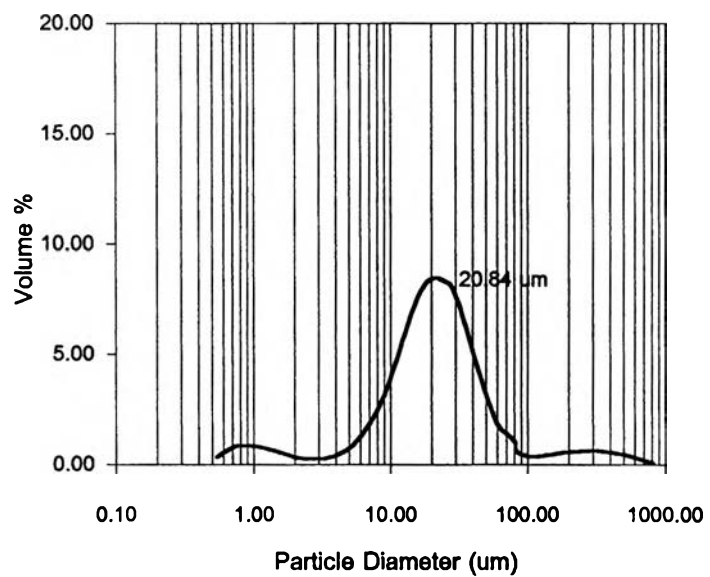


Figure 30C Particle size distribution of IS20

Table 31C Particle size distribution of IS27

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|-------|-------------|------------------------------|------|-------------|
| 0.53 | 0.22 | 0.22 | 44.72 | 5.88 | 89.10 |
| 0.62 | 0.40 | 0.62 | 52.10 | 4.21 | 93.31 |
| 0.72 | 0.52 | 1.13 | 60.69 | 2.79 | 96.09 |
| 0.84 | 0.50 | 1.63 | 70.71 | 1.67 | 97.76 |
| 0.98 | 0.47 | 2.10 | 82.37 | 0.98 | 98.74 |
| 1.15 | 0.41 | 2.51 | 95.97 | 0.59 | 99.33 |
| 1.34 | 0.35 | 2.87 | 111.80 | 0.38 | 99.71 |
| 1.56 | 0.30 | 3.16 | 130.25 | 0.22 | 99.93 |
| 1.81 | 0.26 | 3.42 | 151.73 | 0.07 | 100.00 |
| 2.11 | 0.25 | 3.67 | 176.77 | 0.00 | 100.00 |
| 2.46 | 0.27 | 3.94 | 205.94 | 0.00 | 100.00 |
| 2.86 | 0.32 | 4.27 | 239.92 | 0.00 | 100.00 |
| 3.34 | 0.37 | 4.64 | 279.50 | 0.00 | 100.00 |
| 3.88 | 0.42 | 5.06 | 325.62 | 0.00 | 100.00 |
| 4.52 | 0.48 | 5.54 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.60 | 6.14 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.81 | 6.95 | 514.86 | 0.00 | 100.00 |
| 7.15 | 1.17 | 8.12 | 599.81 | 0.00 | 100.00 |
| 8.34 | 1.74 | 9.86 | 698.78 | 0.00 | 100.00 |
| 9.71 | 2.60 | 12.45 | 814.08 | 0.00 | 100.00 |
| 11.31 | 3.81 | 16.26 | | | |
| 13.18 | 5.34 | 21.60 | | | |
| 15.35 | 7.02 | 28.62 | | | |
| 17.89 | 8.53 | 37.15 | | | |
| 20.84 | 9.60 | 46.75 | | | |
| 24.27 | 10.02 | 56.77 | | | |
| 28.28 | 9.78 | 66.56 | | | |
| 32.95 | 9.02 | 75.58 | | | |
| 38.38 | 7.63 | 83.21 | | | |

Table 32C Particle size distribution of IS33

| Geometric mean diameter (um) | In% | Under size% | Geometric mean diameter (um) | In% | Under size% |
|------------------------------|------|-------------|------------------------------|------|-------------|
| 0.53 | 0.25 | 0.25 | 44.72 | 8.89 | 74.30 |
| 0.62 | 0.43 | 0.68 | 52.10 | 7.36 | 81.66 |
| 0.72 | 0.50 | 1.18 | 60.69 | 5.64 | 87.30 |
| 0.84 | 0.39 | 1.57 | 70.71 | 3.97 | 91.28 |
| 0.98 | 0.28 | 1.85 | 82.37 | 2.56 | 93.84 |
| 1.15 | 0.18 | 2.03 | 95.97 | 1.52 | 95.36 |
| 1.34 | 0.10 | 2.14 | 111.80 | 0.90 | 96.27 |
| 1.56 | 0.05 | 2.19 | 130.25 | 0.87 | 97.13 |
| 1.81 | 0.02 | 2.21 | 151.73 | 0.75 | 97.88 |
| 2.11 | 0.14 | 2.35 | 176.77 | 0.73 | 98.61 |
| 2.46 | 0.17 | 2.52 | 205.94 | 0.64 | 99.25 |
| 2.86 | 0.22 | 2.74 | 239.92 | 0.45 | 99.70 |
| 3.34 | 0.28 | 3.02 | 279.50 | 0.23 | 99.93 |
| 3.88 | 0.31 | 3.33 | 325.62 | 0.07 | 100.00 |
| 4.52 | 0.33 | 3.66 | 379.35 | 0.00 | 100.00 |
| 5.27 | 0.34 | 4.00 | 441.94 | 0.00 | 100.00 |
| 6.14 | 0.38 | 4.37 | 514.86 | 0.00 | 100.00 |
| 7.15 | 0.49 | 4.86 | 599.81 | 0.00 | 100.00 |
| 8.34 | 0.74 | 5.60 | 698.78 | 0.00 | 100.00 |
| 9.71 | 1.18 | 6.78 | 814.08 | 0.00 | 100.00 |
| 11.31 | 1.89 | 8.67 | | | |
| 13.18 | 2.89 | 11.56 | | | |
| 15.35 | 4.19 | 15.74 | | | |
| 17.89 | 5.67 | 21.41 | | | |
| 20.84 | 7.14 | 28.55 | | | |
| 24.27 | 8.39 | 36.94 | | | |
| 28.28 | 9.26 | 46.20 | | | |
| 32.95 | 9.64 | 55.84 | | | |
| 38.38 | 9.58 | 65.42 | | | |

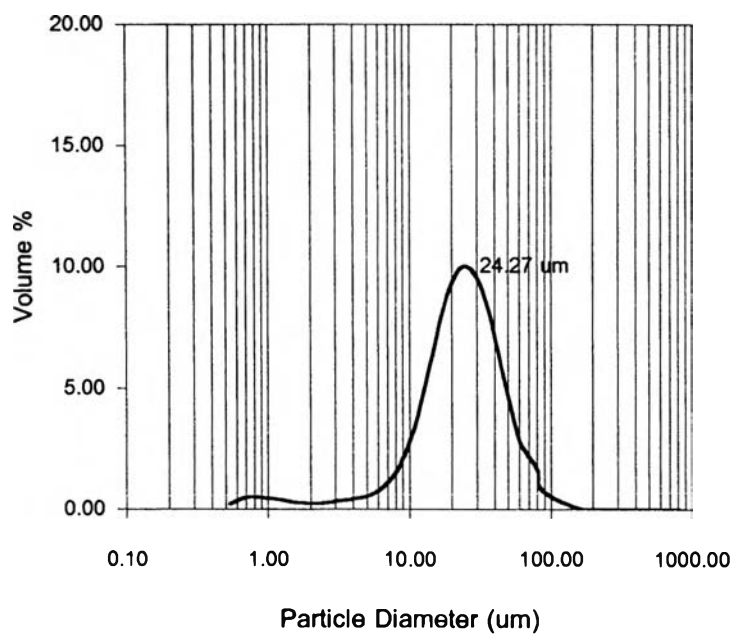


Figure 31C Particle size distribution of IS27

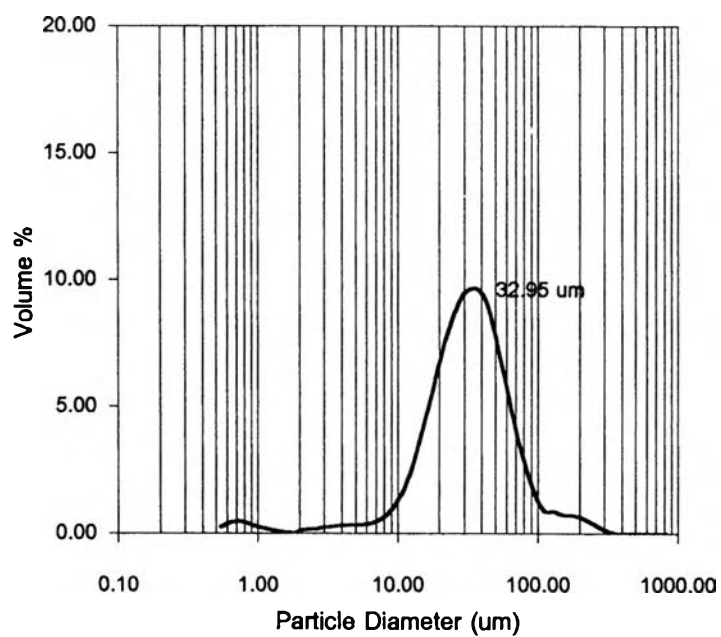


Figure 32C Particle size distribution of IS33

Table 33C Particle size distribution of Spray dried Indomethacin

| Geometric mean (um) | In% | Under % | Geometric mean (um) | In% | Under % |
|---------------------|------|---------|---------------------|------|---------|
| 0.53 | 0.09 | 0.09 | 44.72 | 6.87 | 43.43 |
| 0.62 | 0.17 | 0.26 | 52.10 | 7.21 | 50.65 |
| 0.72 | 0.23 | 0.49 | 60.69 | 7.30 | 57.95 |
| 0.84 | 0.25 | 0.74 | 70.71 | 7.14 | 65.09 |
| 0.98 | 0.26 | 1.01 | 82.37 | 6.82 | 71.91 |
| 1.15 | 0.27 | 1.27 | 95.97 | 5.87 | 77.78 |
| 1.34 | 0.25 | 1.53 | 111.80 | 4.81 | 82.59 |
| 1.56 | 0.23 | 1.76 | 130.25 | 3.78 | 86.37 |
| 1.81 | 0.21 | 1.97 | 151.73 | 2.82 | 89.19 |
| 2.11 | 0.20 | 2.17 | 176.77 | 2.03 | 91.22 |
| 2.46 | 0.19 | 2.36 | 205.94 | 1.44 | 92.66 |
| 2.86 | 0.19 | 2.54 | 239.92 | 1.05 | 93.71 |
| 3.34 | 0.20 | 2.74 | 279.50 | 0.85 | 94.56 |
| 3.88 | 0.22 | 2.97 | 325.62 | 0.67 | 95.23 |
| 4.52 | 0.25 | 3.22 | 379.35 | 0.74 | 95.98 |
| 5.27 | 0.31 | 3.52 | 441.94 | 0.84 | 96.82 |
| 6.14 | 0.38 | 3.91 | 514.86 | 0.93 | 97.75 |
| 7.15 | 0.49 | 4.39 | 599.81 | 0.94 | 98.70 |
| 8.34 | 0.63 | 5.02 | 698.78 | 0.81 | 99.51 |
| 9.71 | 0.83 | 5.85 | 814.08 | 0.49 | 100.00 |
| 11.31 | 1.11 | 6.96 | | | |
| 13.18 | 1.47 | 8.42 | | | |
| 15.35 | 1.93 | 10.35 | | | |
| 17.89 | 2.50 | 12.86 | | | |
| 20.84 | 3.17 | 16.03 | | | |
| 24.27 | 3.93 | 19.96 | | | |
| 28.28 | 4.75 | 24.71 | | | |
| 32.95 | 5.56 | 30.26 | | | |
| 38.38 | 6.30 | 36.56 | | | |

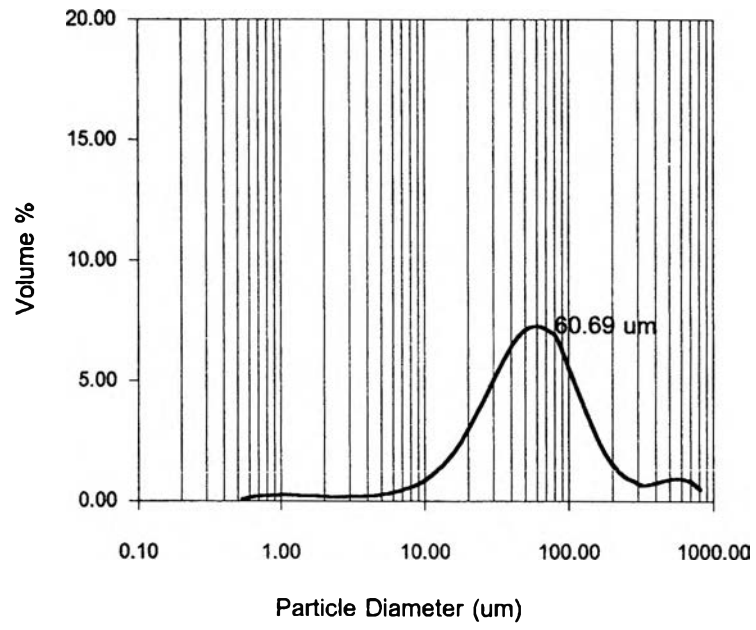


Figure 33C Particle size distribution of spray dried indomethacin

APPENDICES D
TGA THERMOGRAMS OF SPRAY DRIED INDOMETHACIN
AND BETA CYCLODEXTRIN

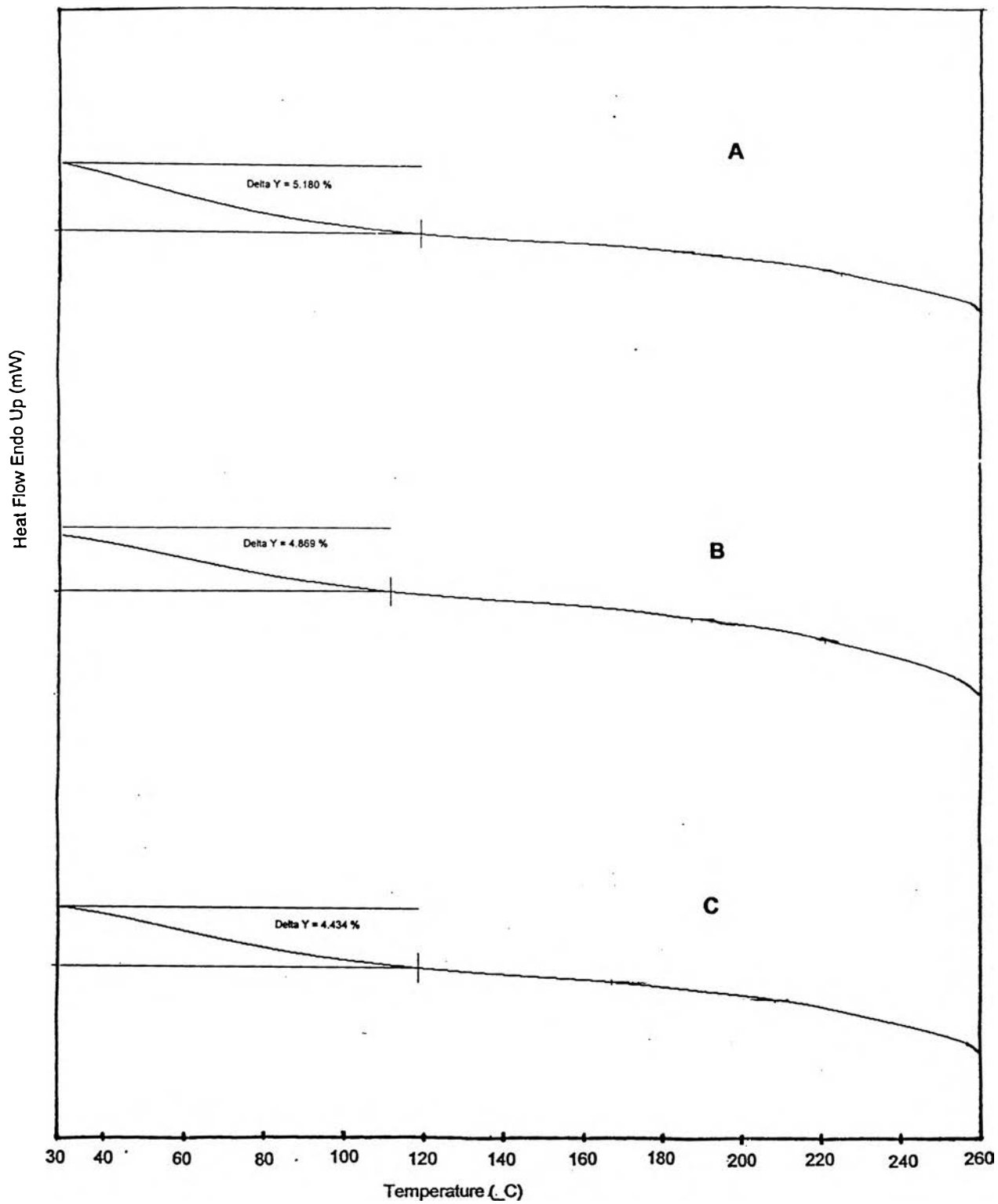


Figure 1D TGA thermograms of IIB prepared by spray drying method, feed rate 10 ml/min [(A) II10B130; (B) II10B140 and (C) II10B150]

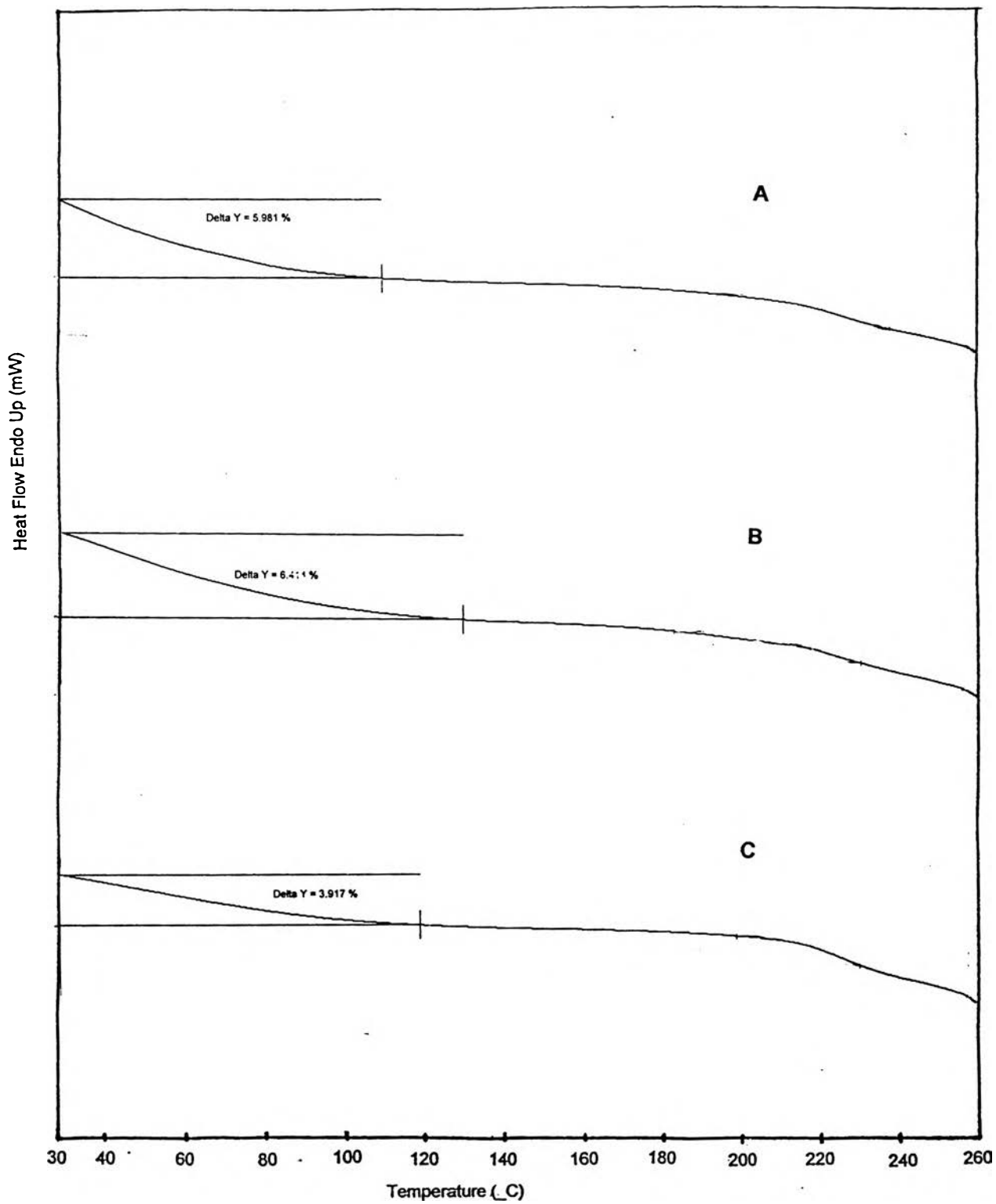


Figure 2D TGA thermograms of IIB prepared by spray drying method, feed rate 15 ml/min [(A) II15B130; (B) II15B140 and (C) II15B150]

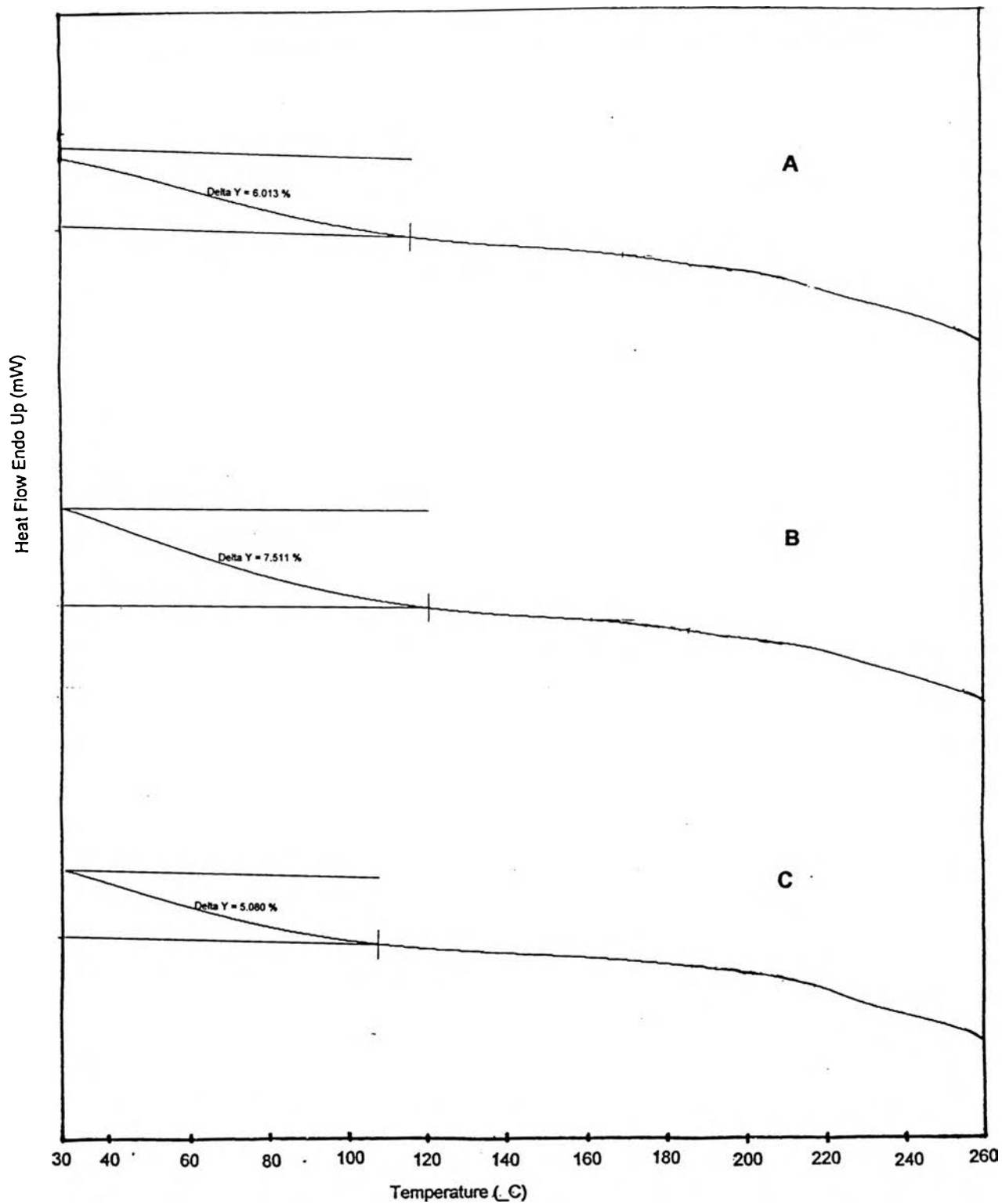


Figure 3D TGA thermograms of IIB prepared by spray drying method, feed rate 20 ml/min [(A) I120B130; (B) I120B140 and (C) I120B150]

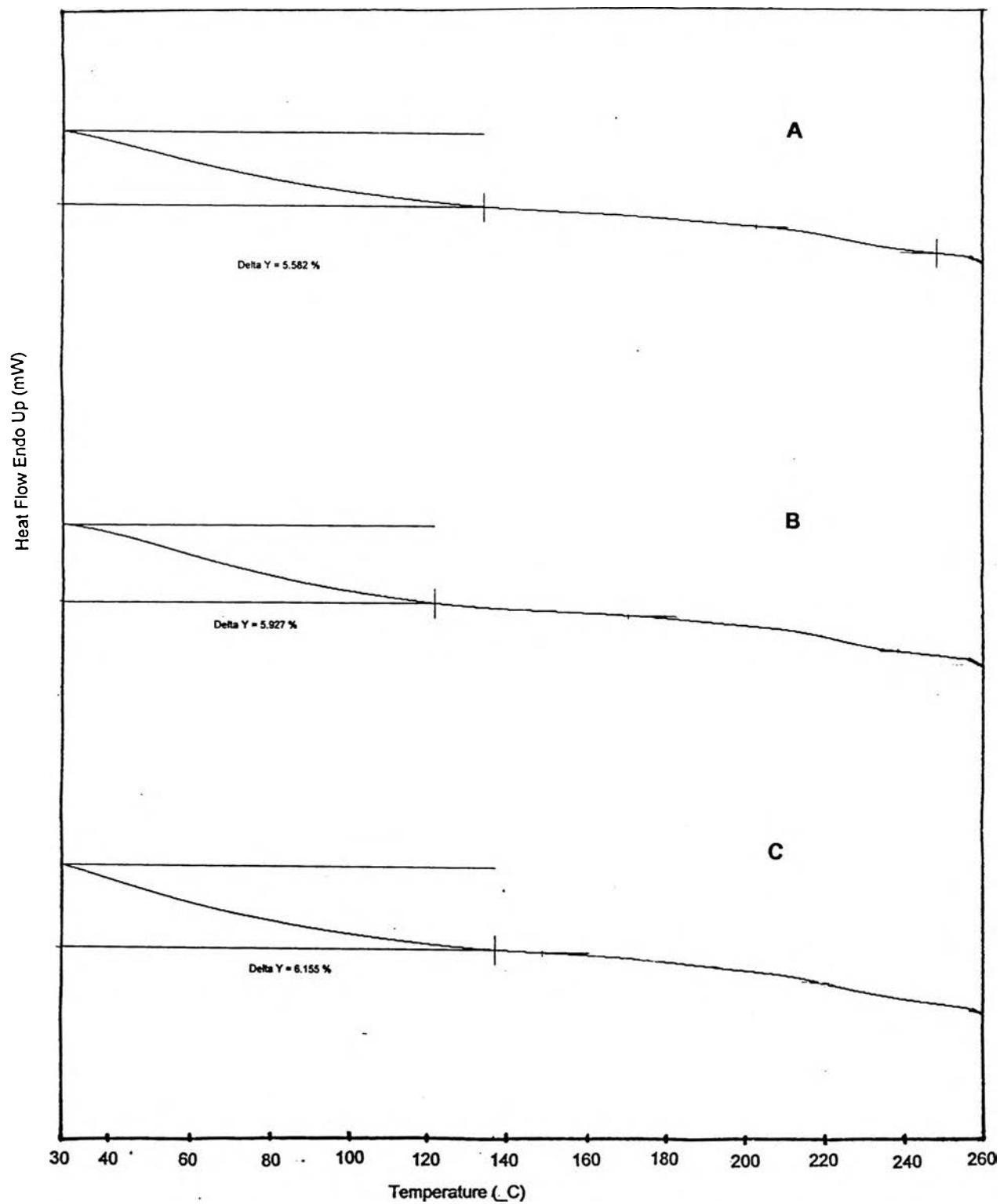


Figure 4D TGA thermograms of IB prepared by spray drying method, feed rate 10 ml/min
[(A) I10B130; (B) I10B140 and (C) I10B150]

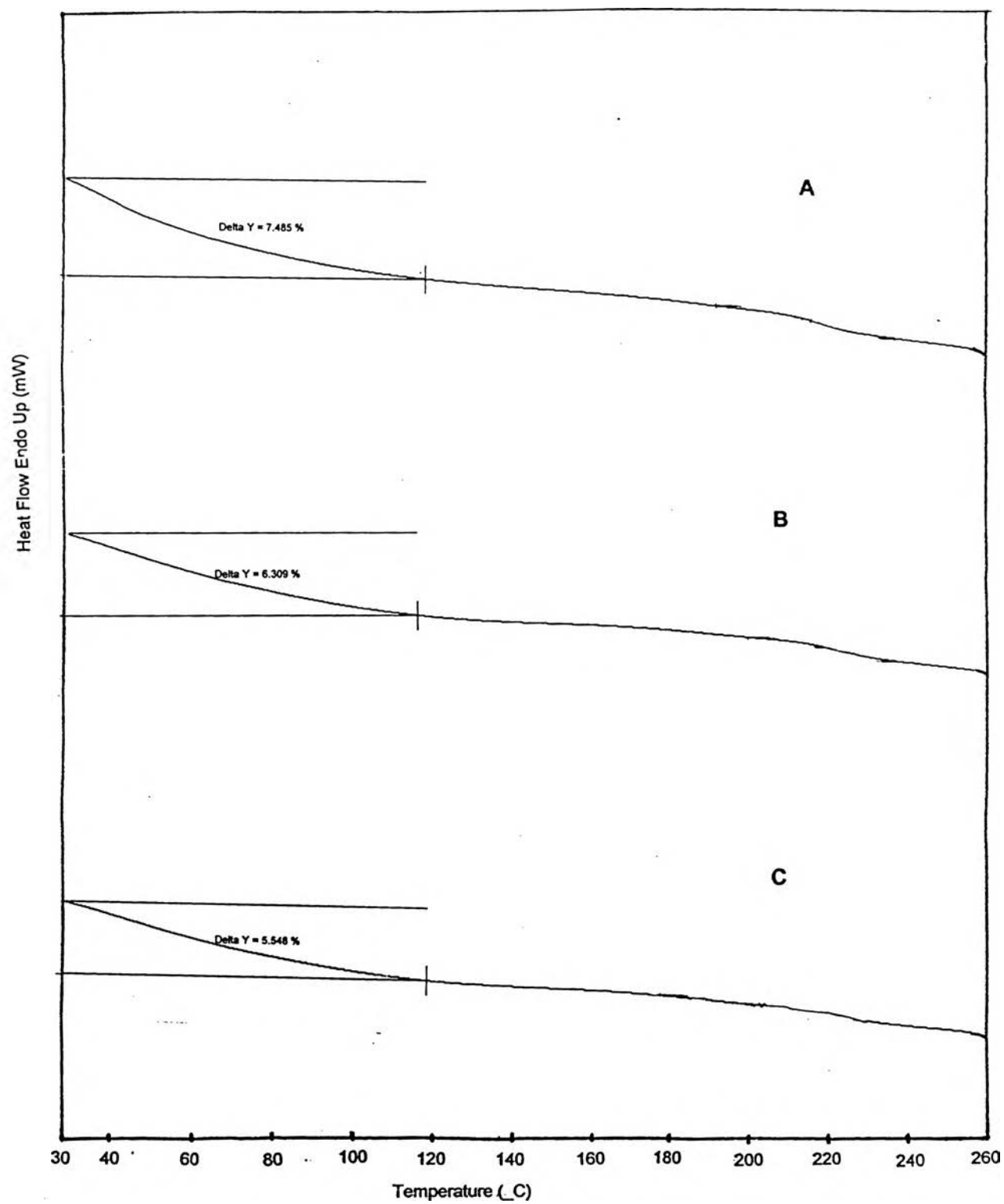


Figure 5D TGA thermograms of IB prepared by spray drying method, feed rate 20 ml/min
[(A) I15B130; (B) I15B140 and (C) I15B150]

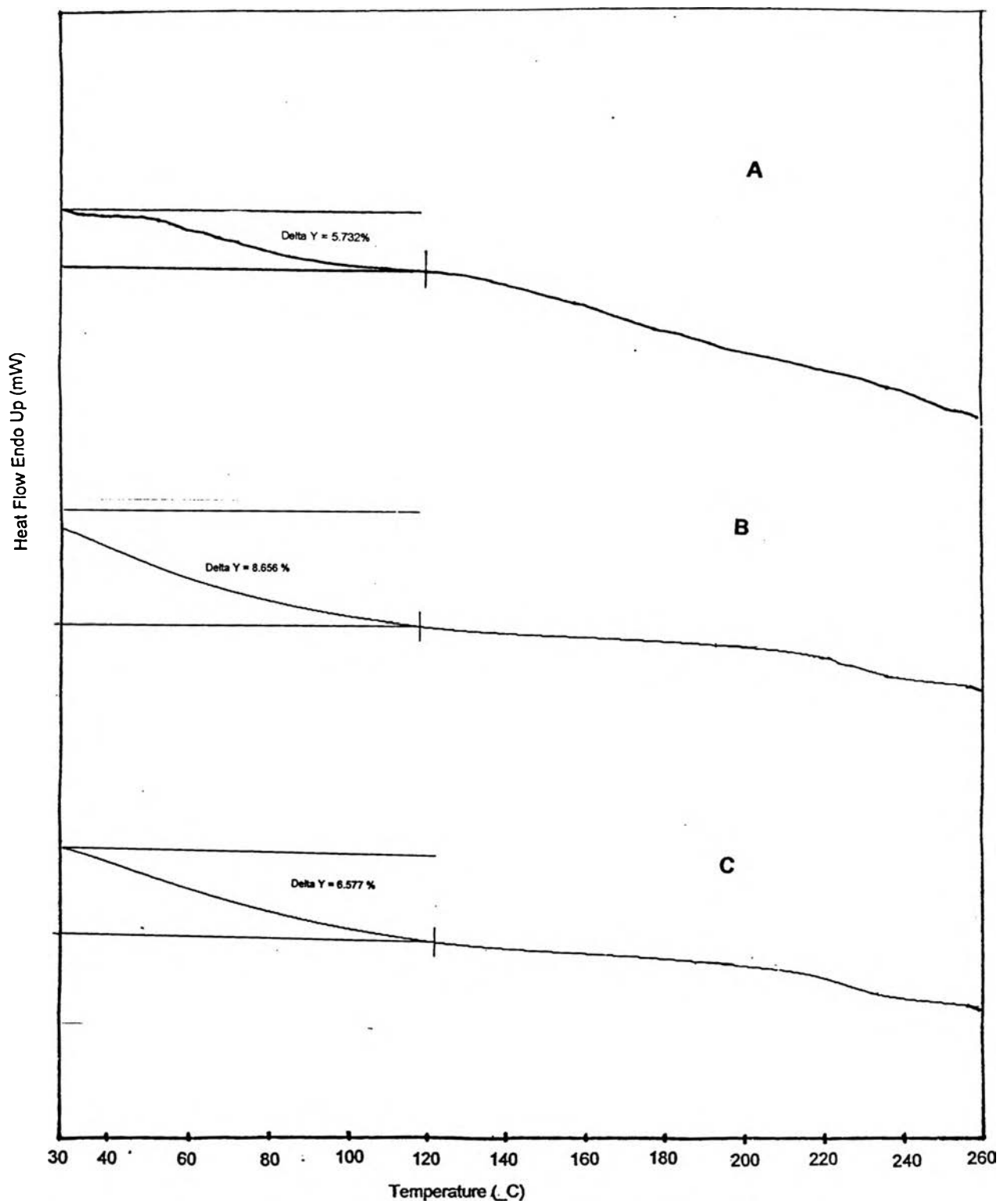


Figure 6D TGA thermograms of IBB prepared by spray drying method, feed rate 10 ml/min [(A) I10BB130; (B) I10BB140 and (C) I10BB150]

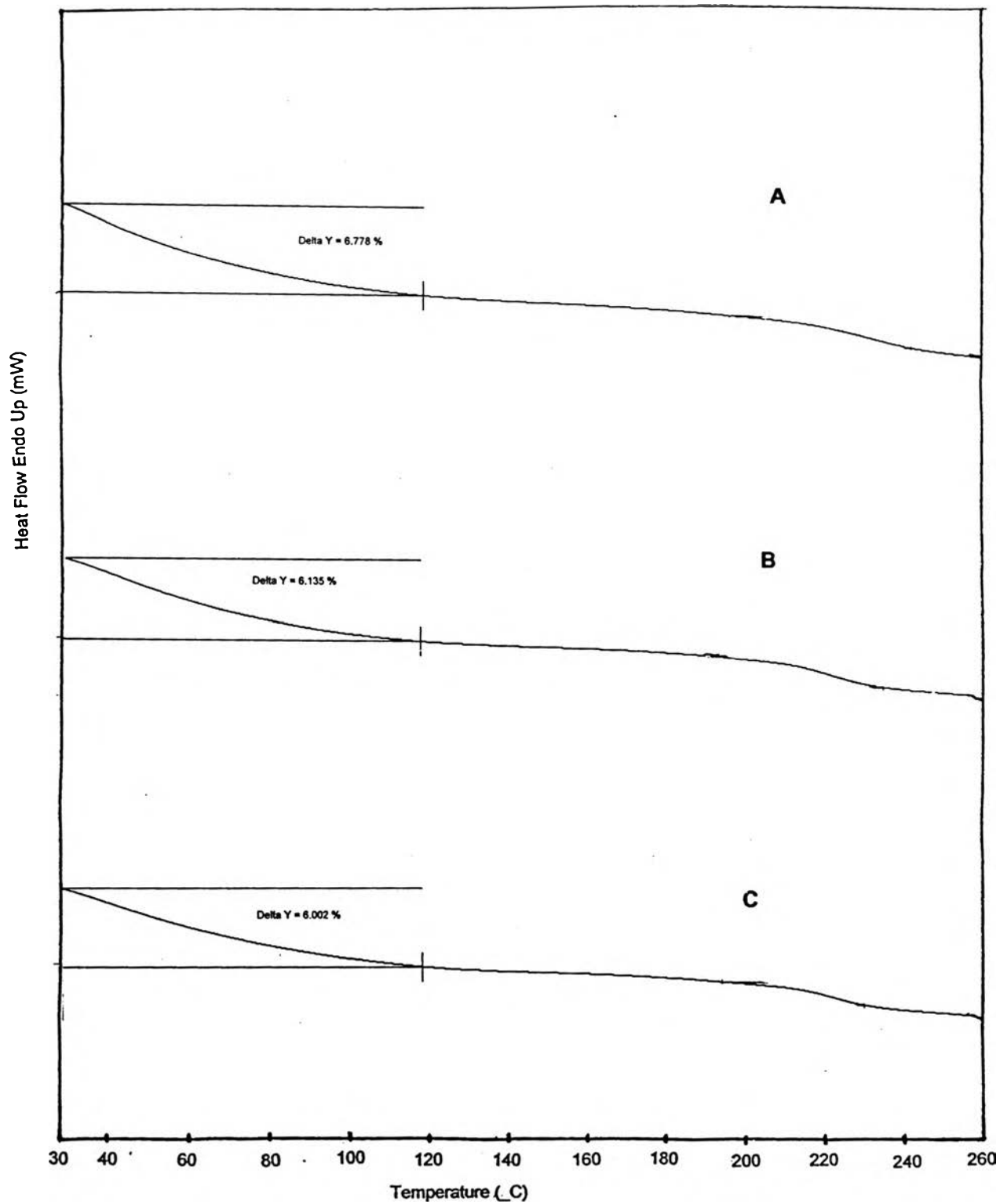


Figure 7D TGA thermograms of IBB prepared by spray drying method, feed rate 15 ml/min [(A) I15BB130; (B) I15BB140 and (C) I15BB150]

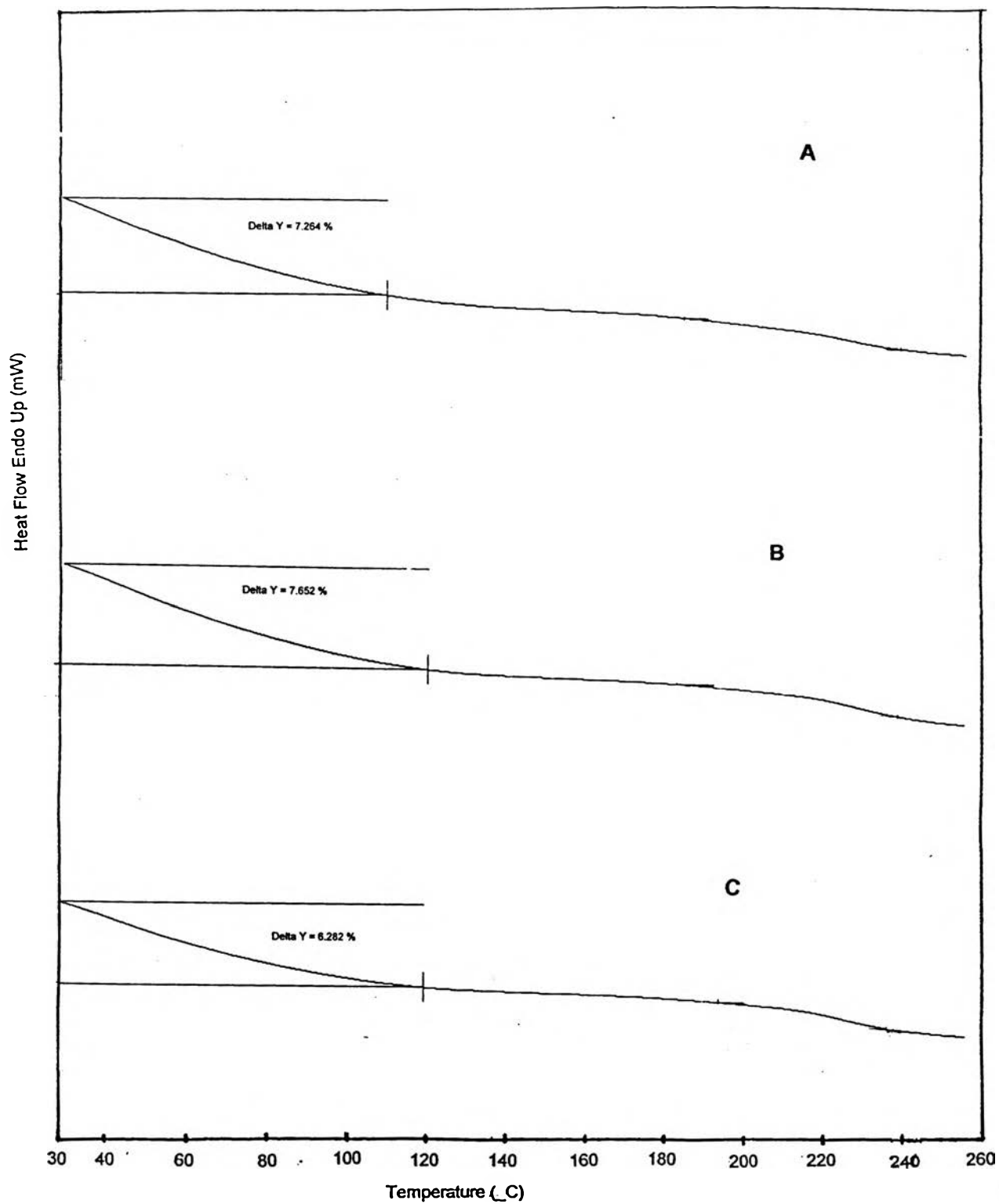


Figure 8D TGA thermograms of IBB prepared by spray drying method, feed rate 20 ml/min [(A) I20BB130; (B) I20BB140 and (C) I20BB150]

APPENDICES E
X-RAY DIFFRACTOGRAMS OF SPRAY DRIED INDOMETHACIN
AND BETA CYCLODEXTRIN

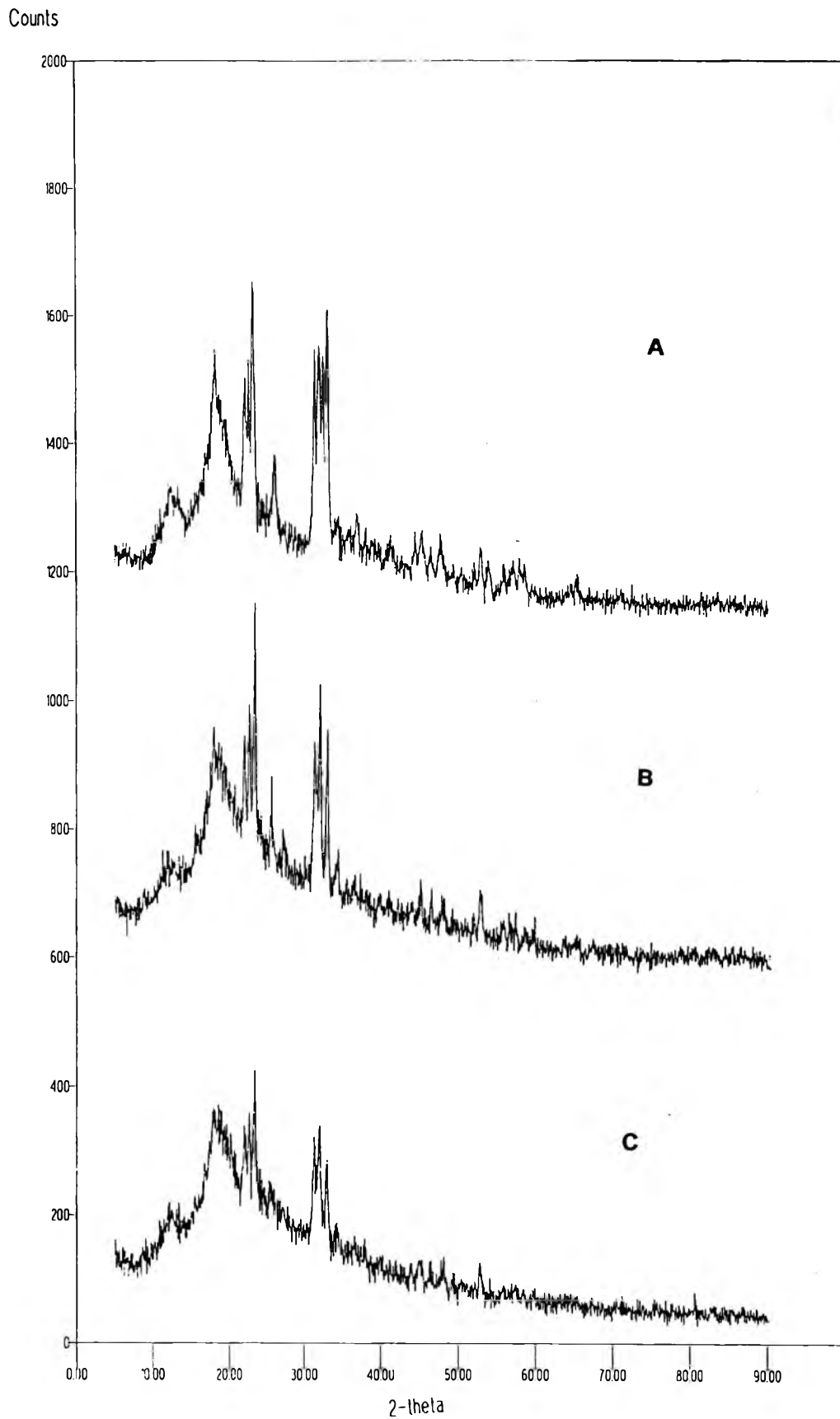


Figure 1E X-ray powder diffractograms of IIB prepared by spray drying method, feed rate 10 ml/min [(A) I10B130; (B) I10B140 and (C) I10B150]

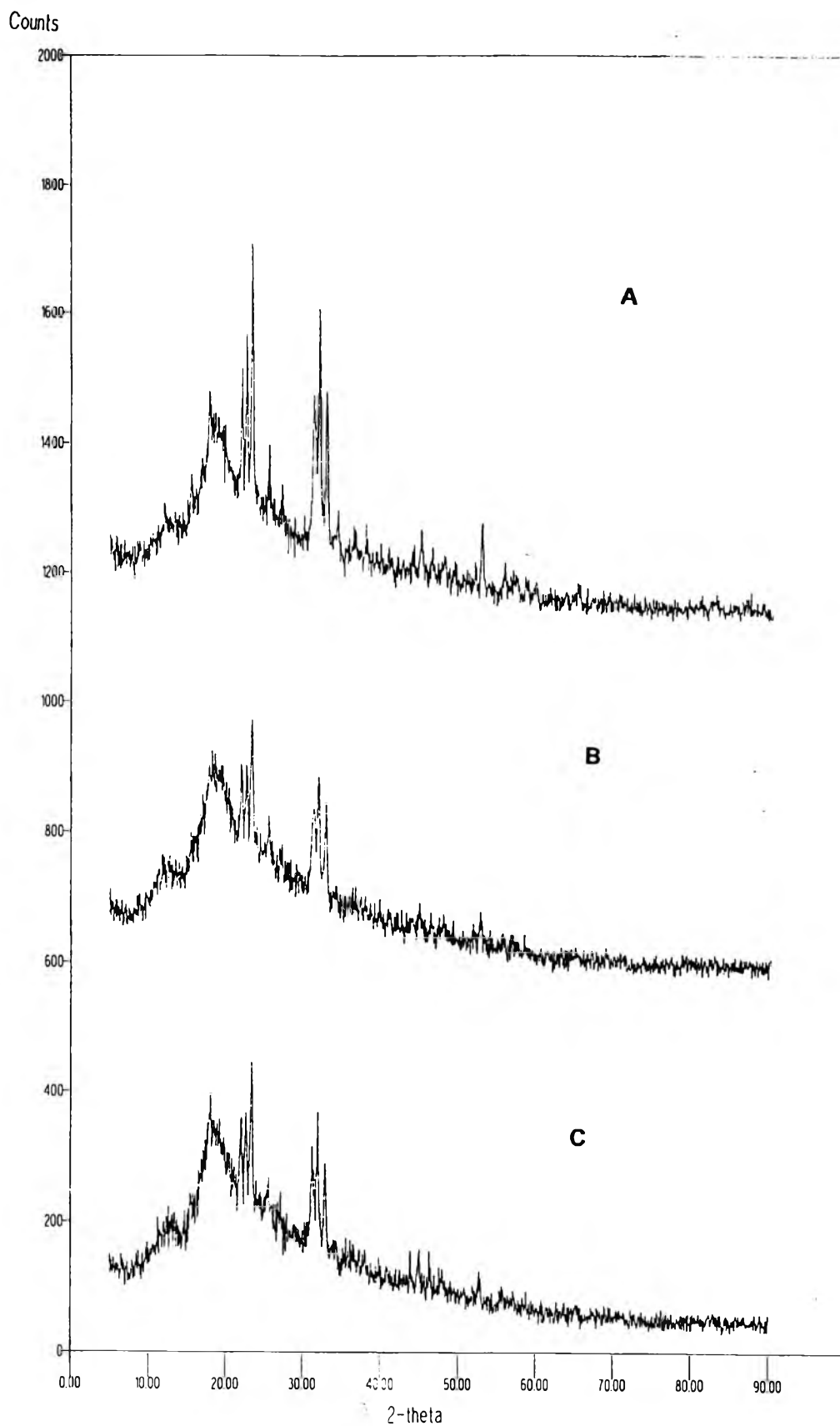


Figure 2E X-ray powder diffractograms of IIB prepared by spray drying method, feed rate 15 ml/min [(A) I15B130; (B) I15B140 and (C) I15B150]

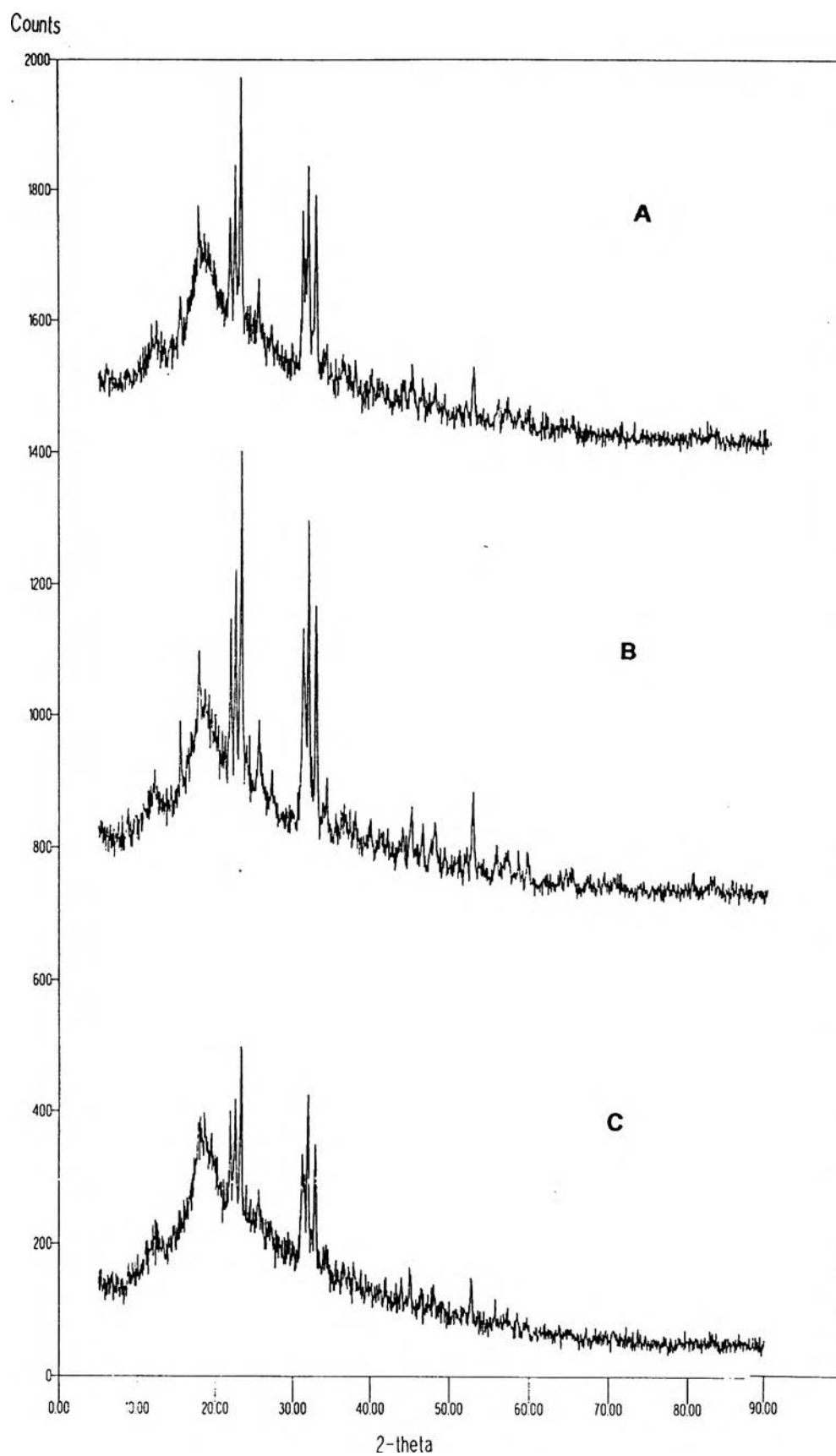


Figure 3E X-ray powder diffractograms of IIB prepared by spray drying method, feed rate 20 ml/min [(A) I120B130; (B) I120B140 and (C) I120B150]

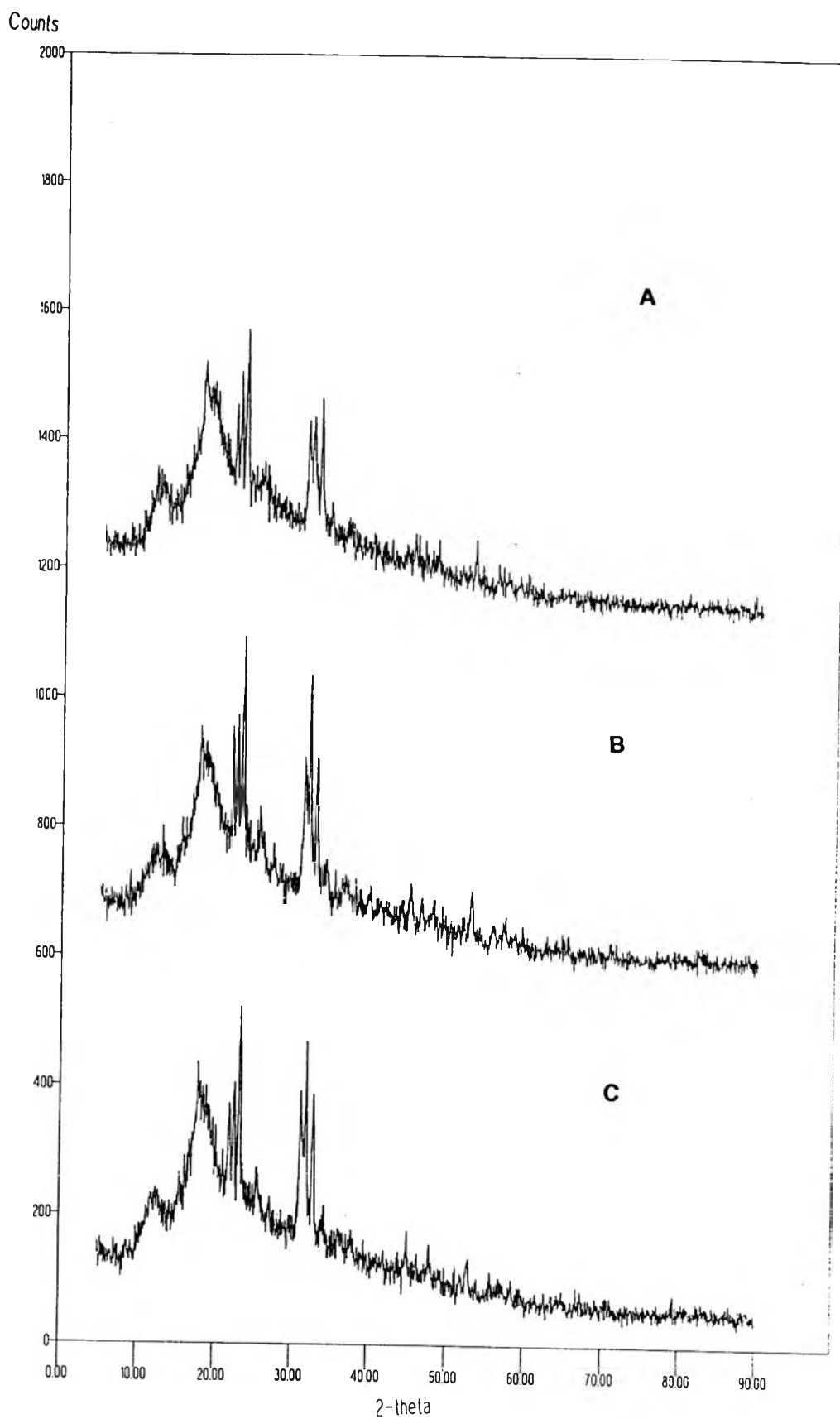


Figure 4E X-ray powder diffractograms of IB prepared by spray drying method, feed rate 10 ml/min [(A) I10B130; (B) I10B140 and (C) I10B150]

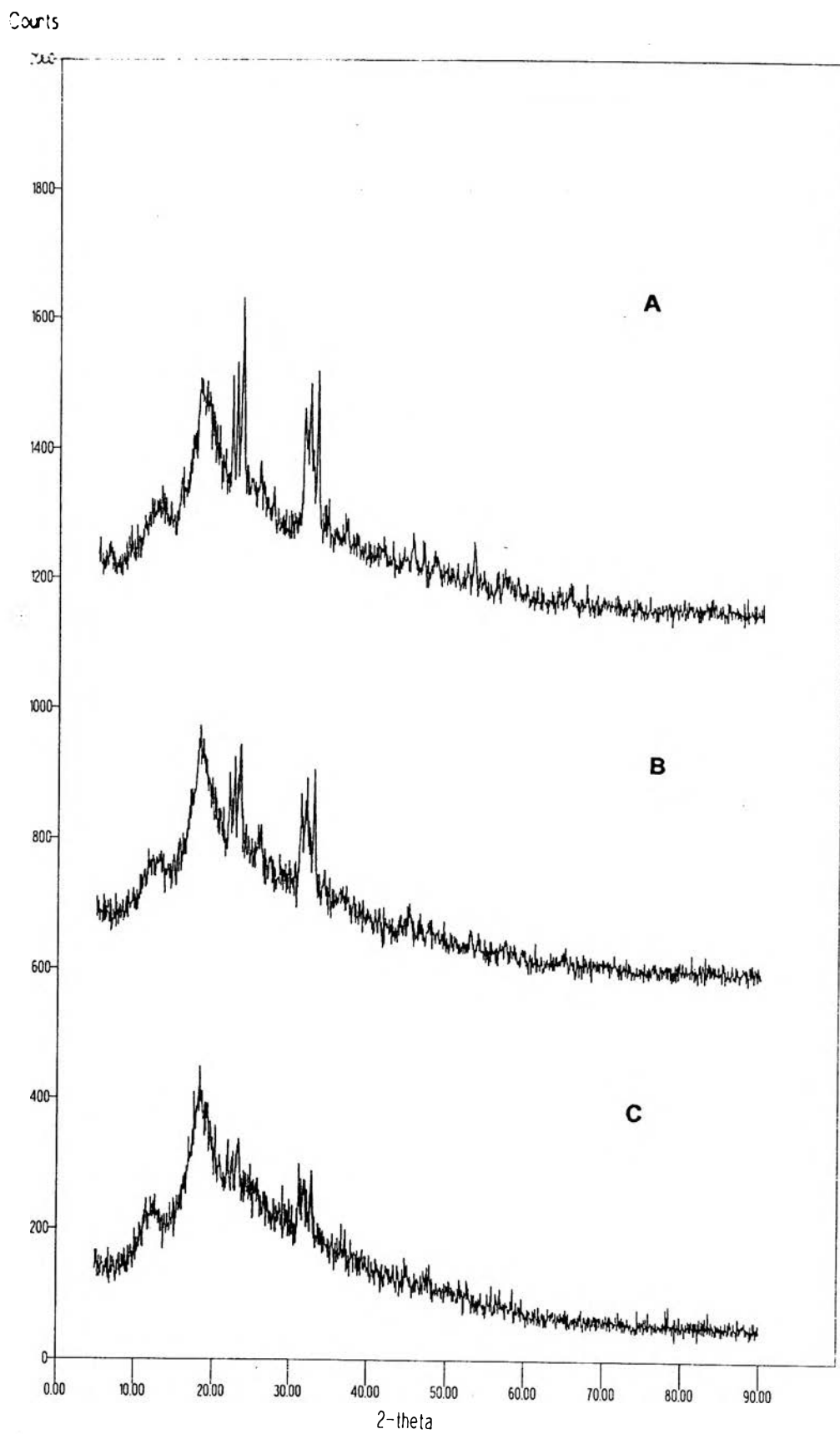


Figure 5E X-ray powder diffractograms of IB prepared by spray drying method, feed rate 20 ml/min [(A) I20B130; (B) I20B140 and (C) I20B150]

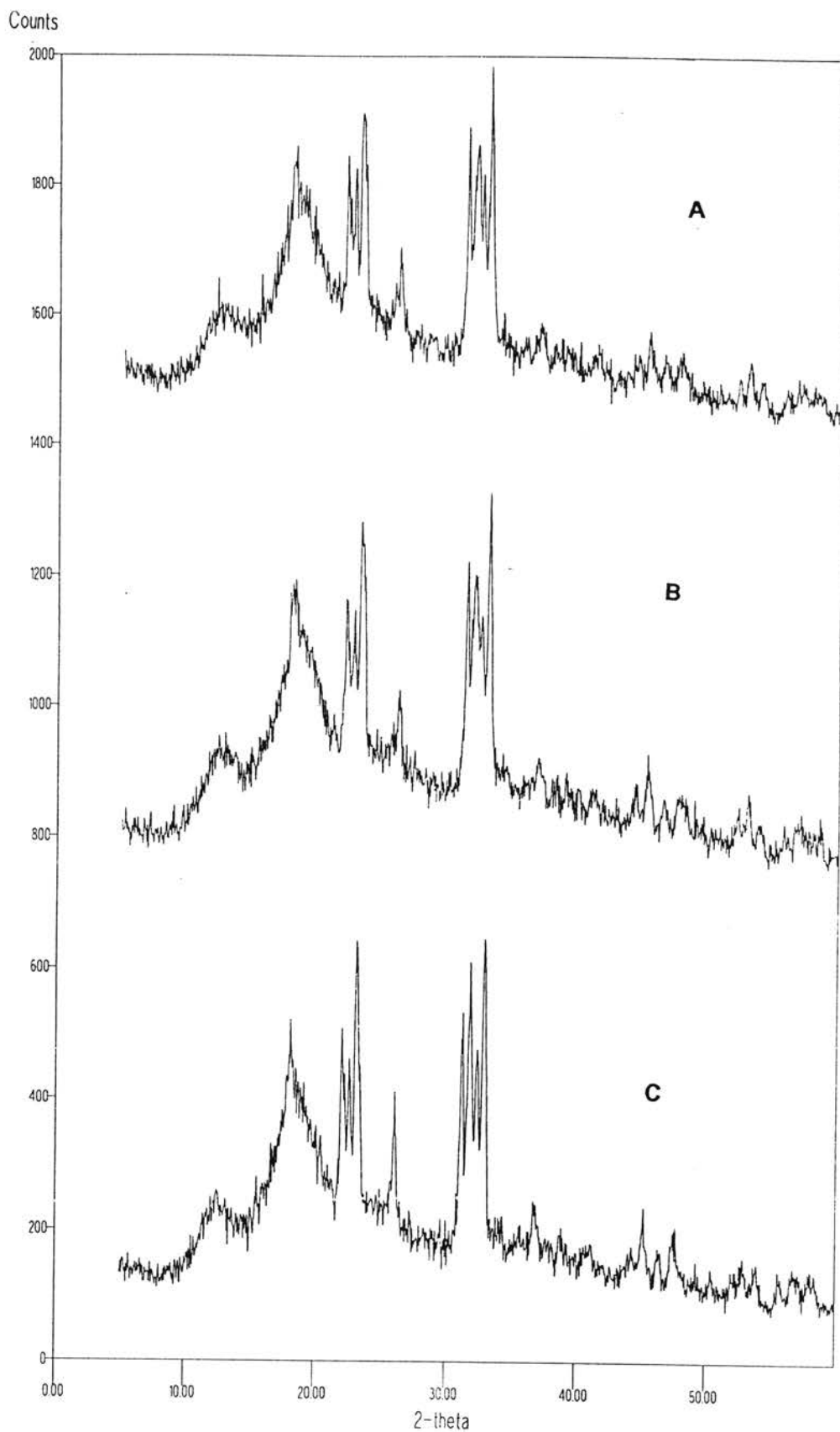


Figure 6E X-ray powder diffractograms of IBB prepared by spray drying method, feed rate 10 ml/min [(A) I10BB130; (B) I10BB140 and (C) I10BB150]

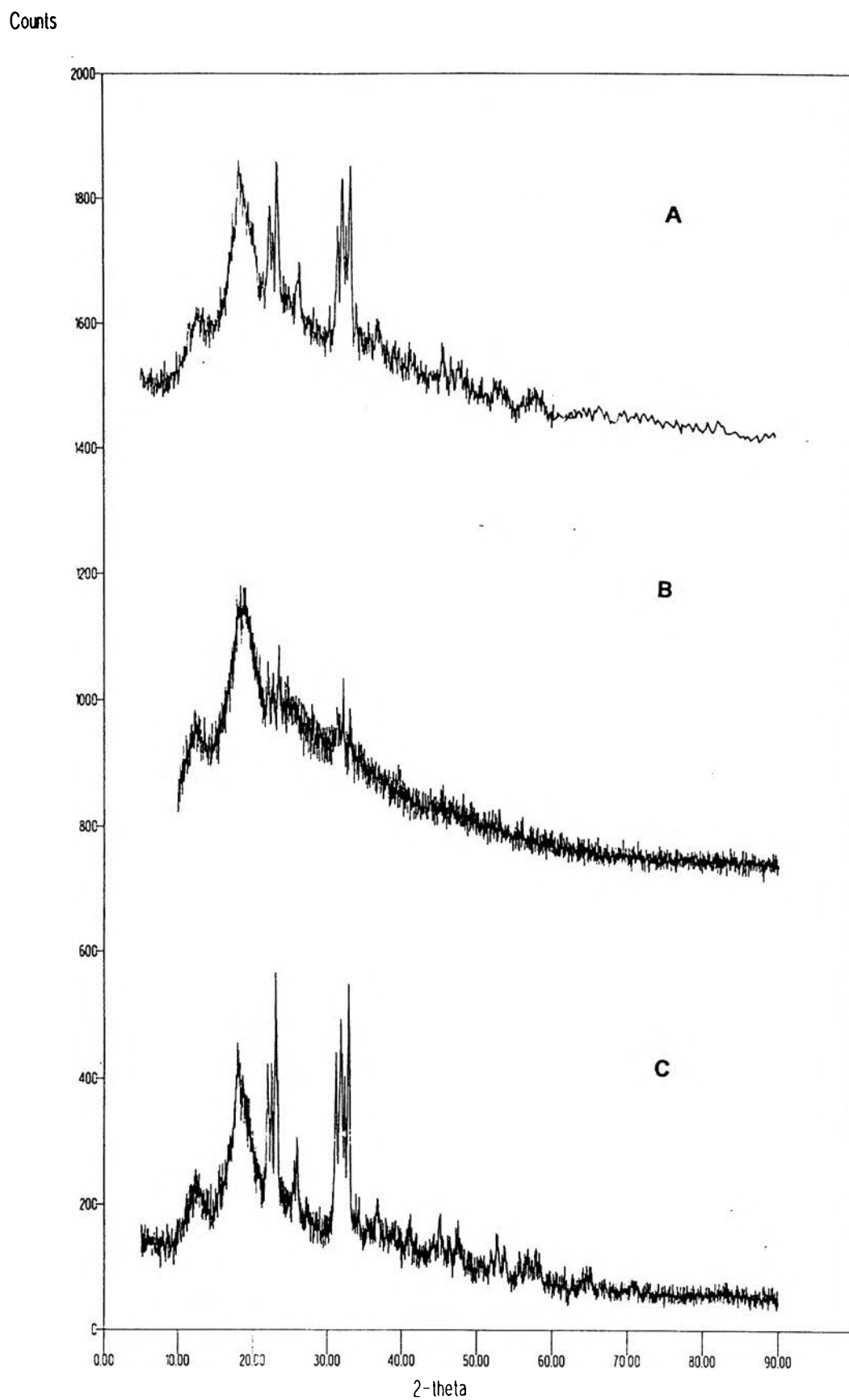


Figure 7E X-ray powder diffractograms of IBB prepared by spray drying method, feed rate 15 ml/min [(A) I15BB130; (B) I15BB140 and (C) I15BB150]

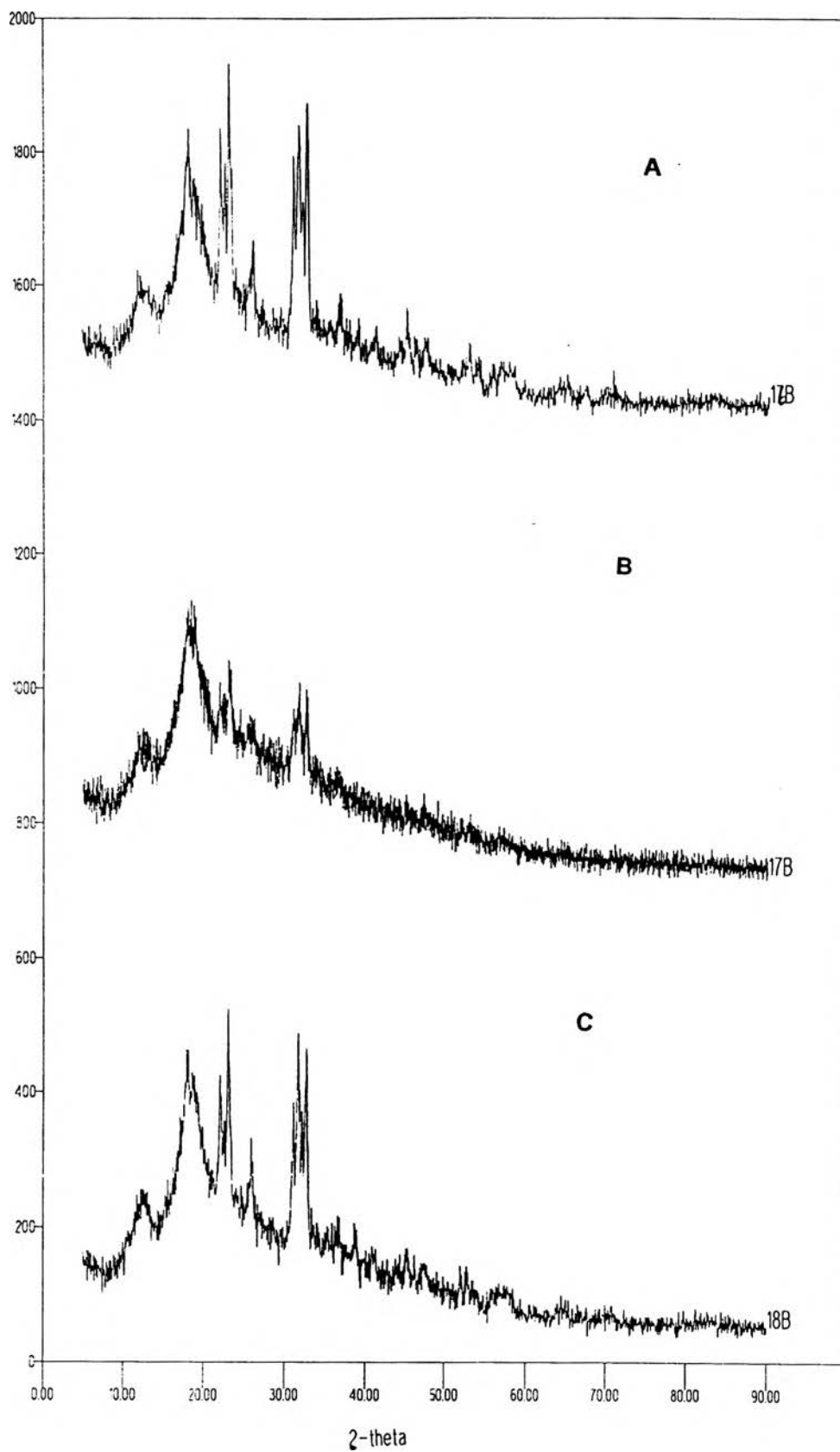


Figure 8E X-ray powder diffractograms of IBB prepared by spray drying method, feed rate 20 ml/min [(A) I20BB130; (B) I20BB140 and (C) I20BB150]

APPENDICES F
DSC THERMOGRAMS OF SPRAY DRIED INDOMETHACIN
AND BETA CYCLODEXTRIN

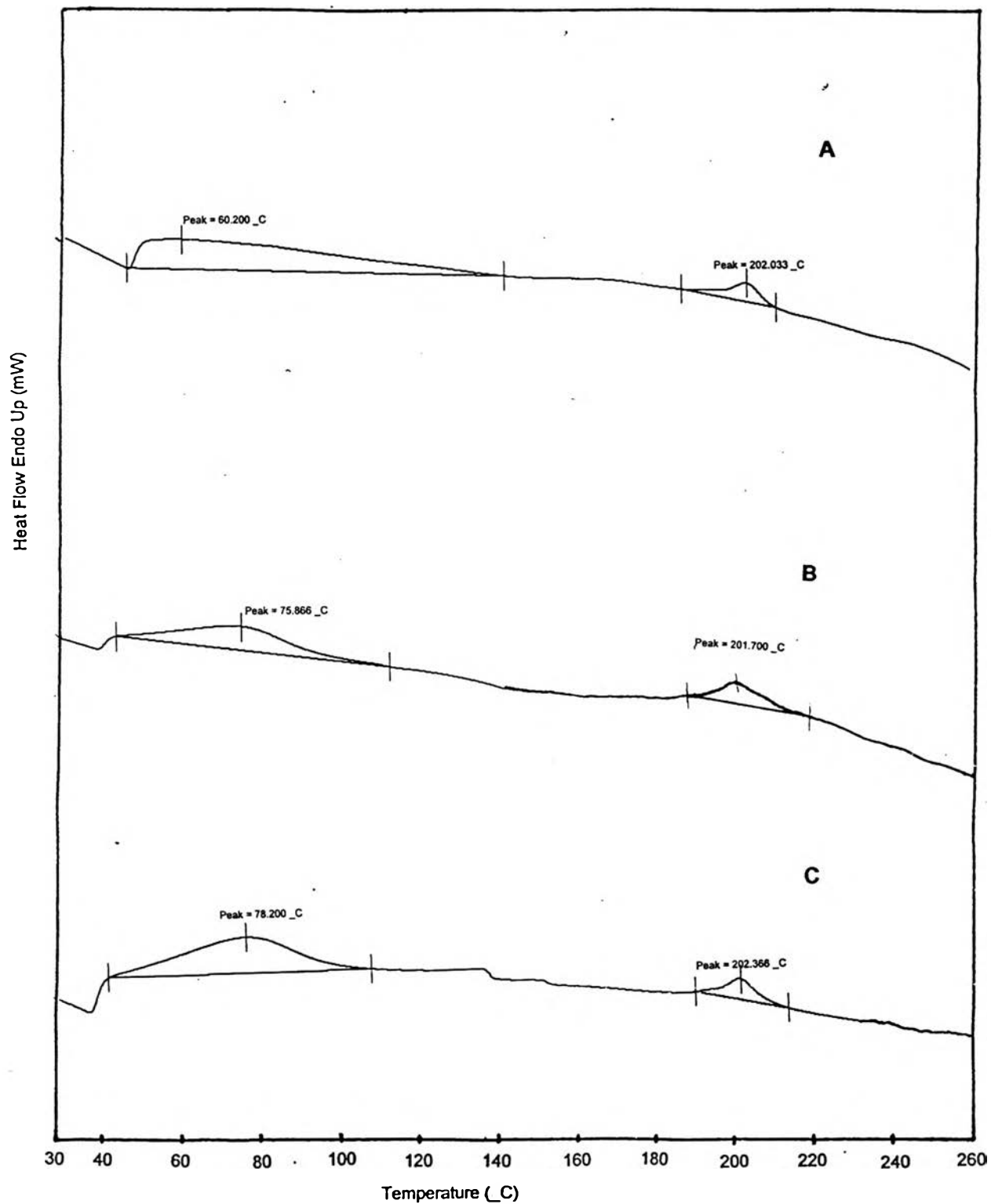


Figure 1F DSC thermograms of IIB prepared by spray drying method, feed rate 10 ml/min [(A) II10B130; (B) II10B140 and (C) II10B150]

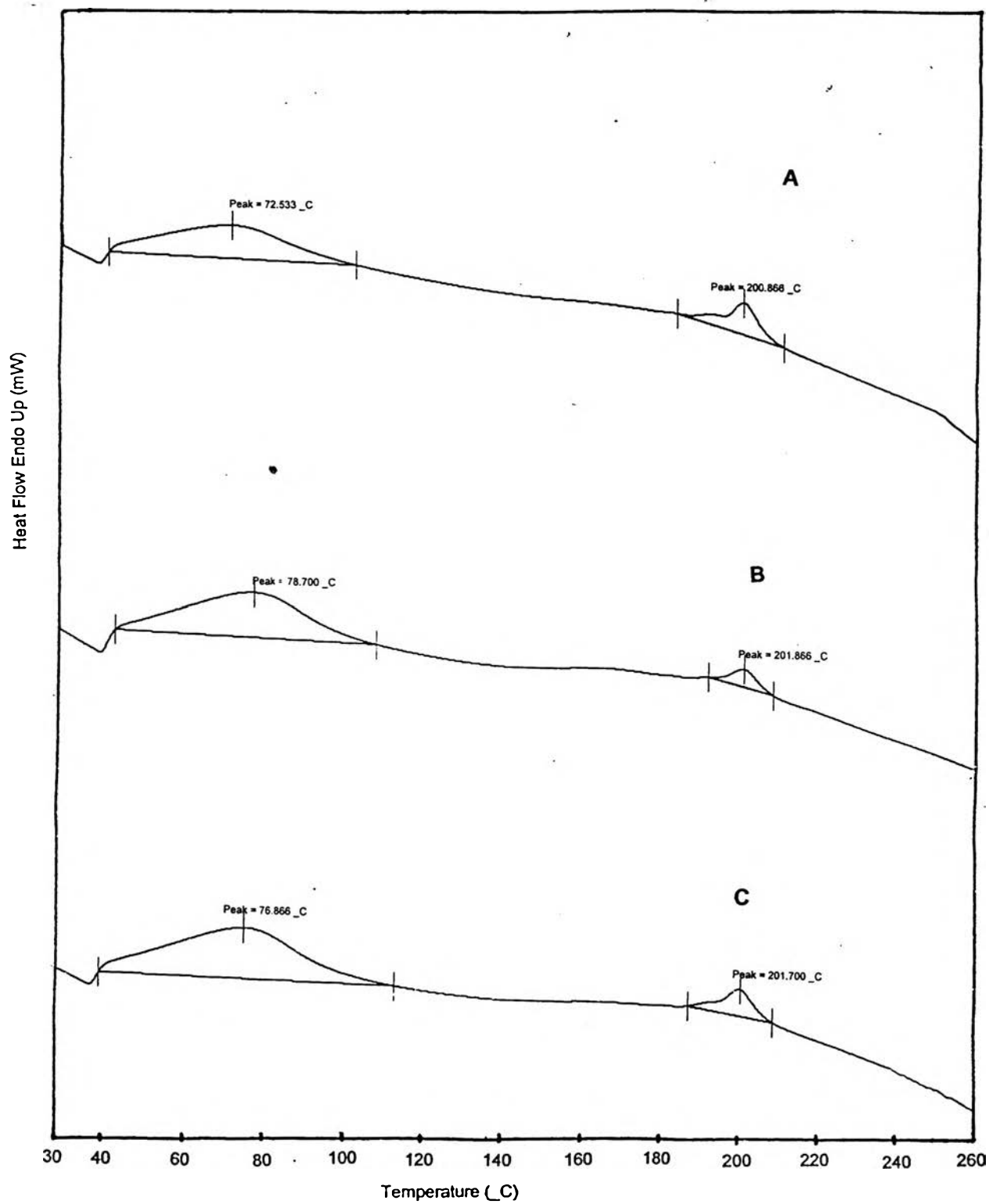


Figure 2F DSC thermograms of II15 prepared by spray drying method, feed rate 15 ml/min [(A) II15B130; (B) II15B140 and (C) II15B150]

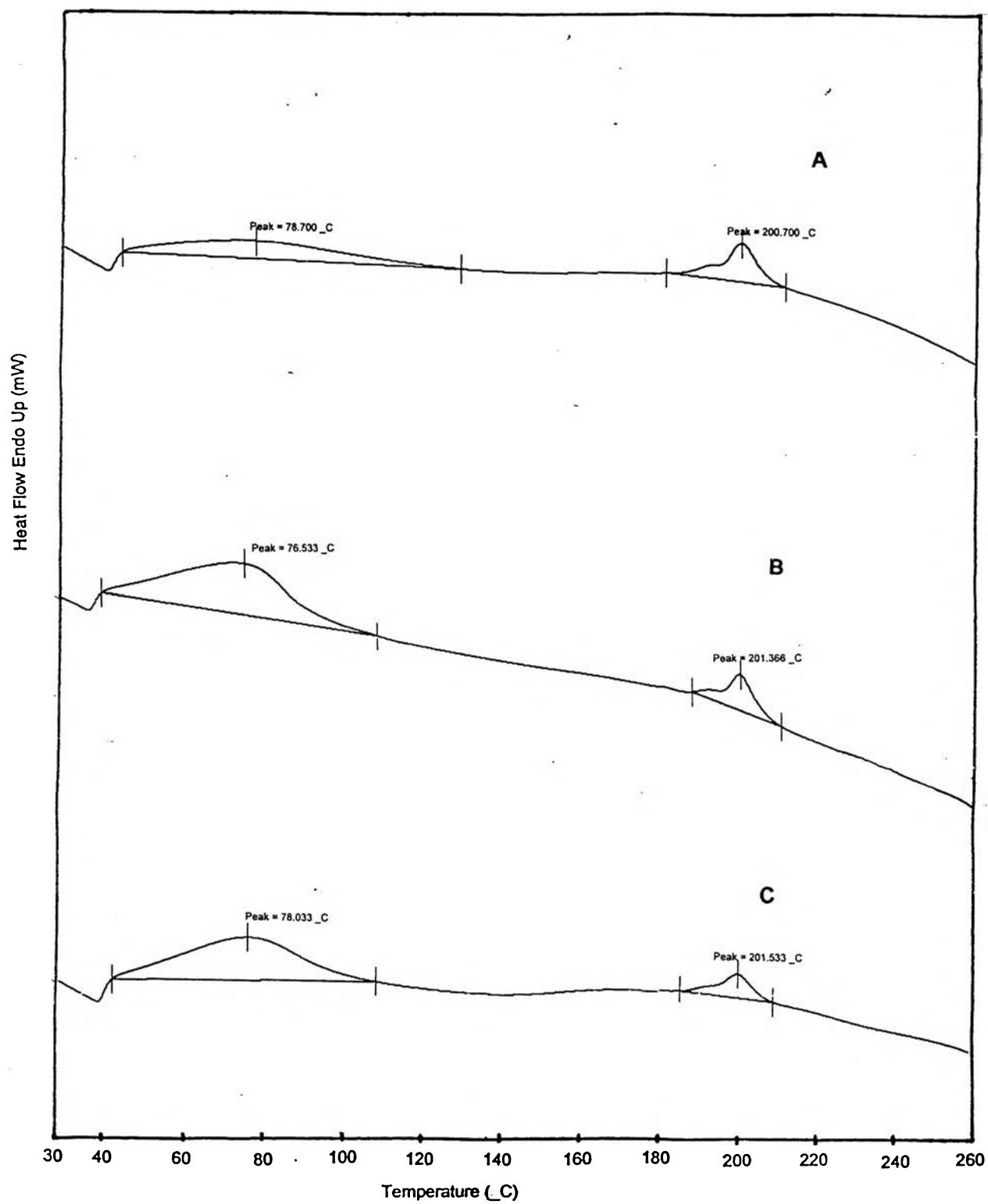


Figure 3F DSC thermograms of IIB prepared by spray drying method, feed rate 20 ml/min [(A) I120B130; (B) I120B140 and (C) I120B150]

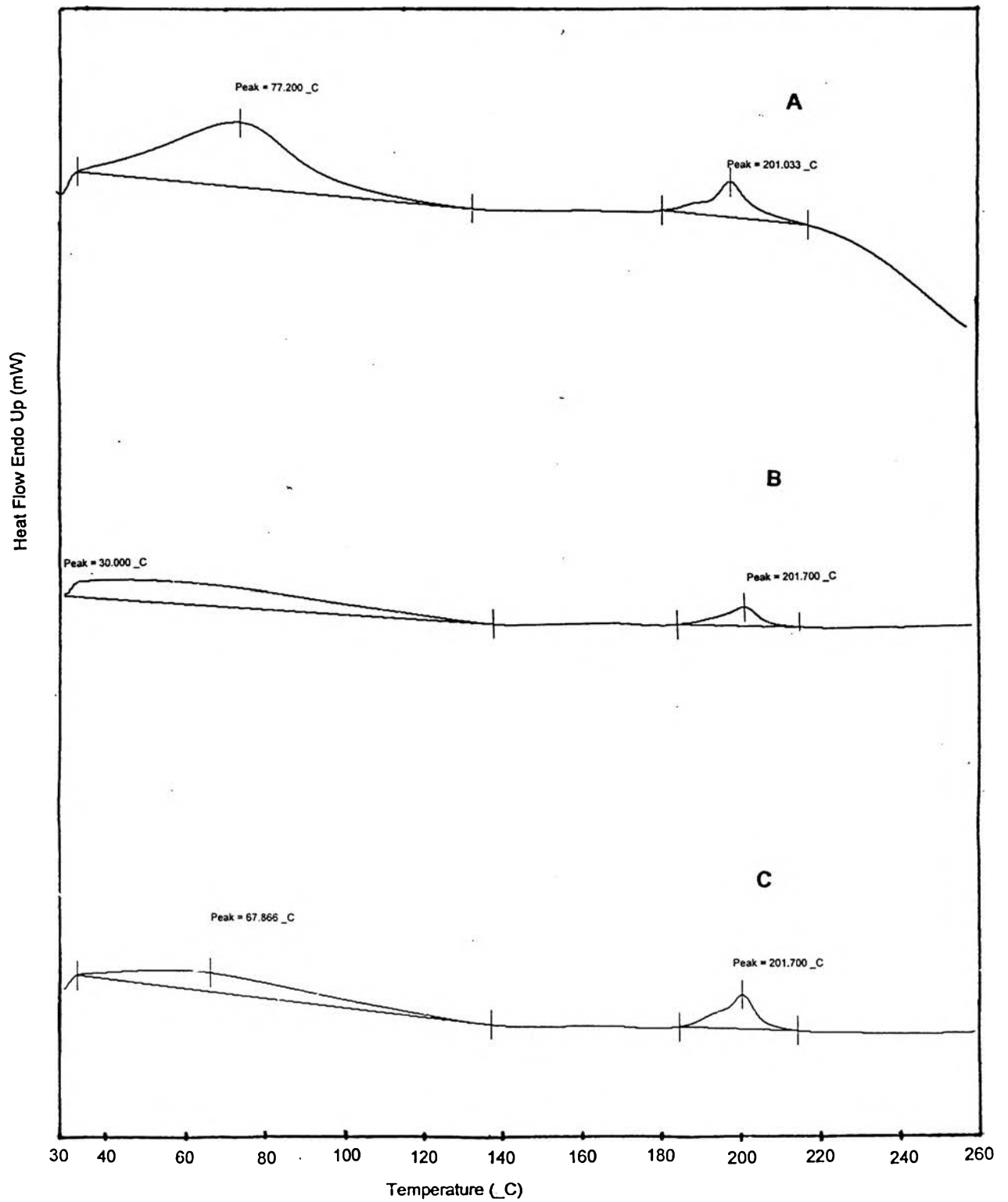


Figure 4F DSC thermograms of IB prepared by spray drying method, feed rate 10 ml/min
[(A) I10B130; (B) I10B140 and (C) I10B150]

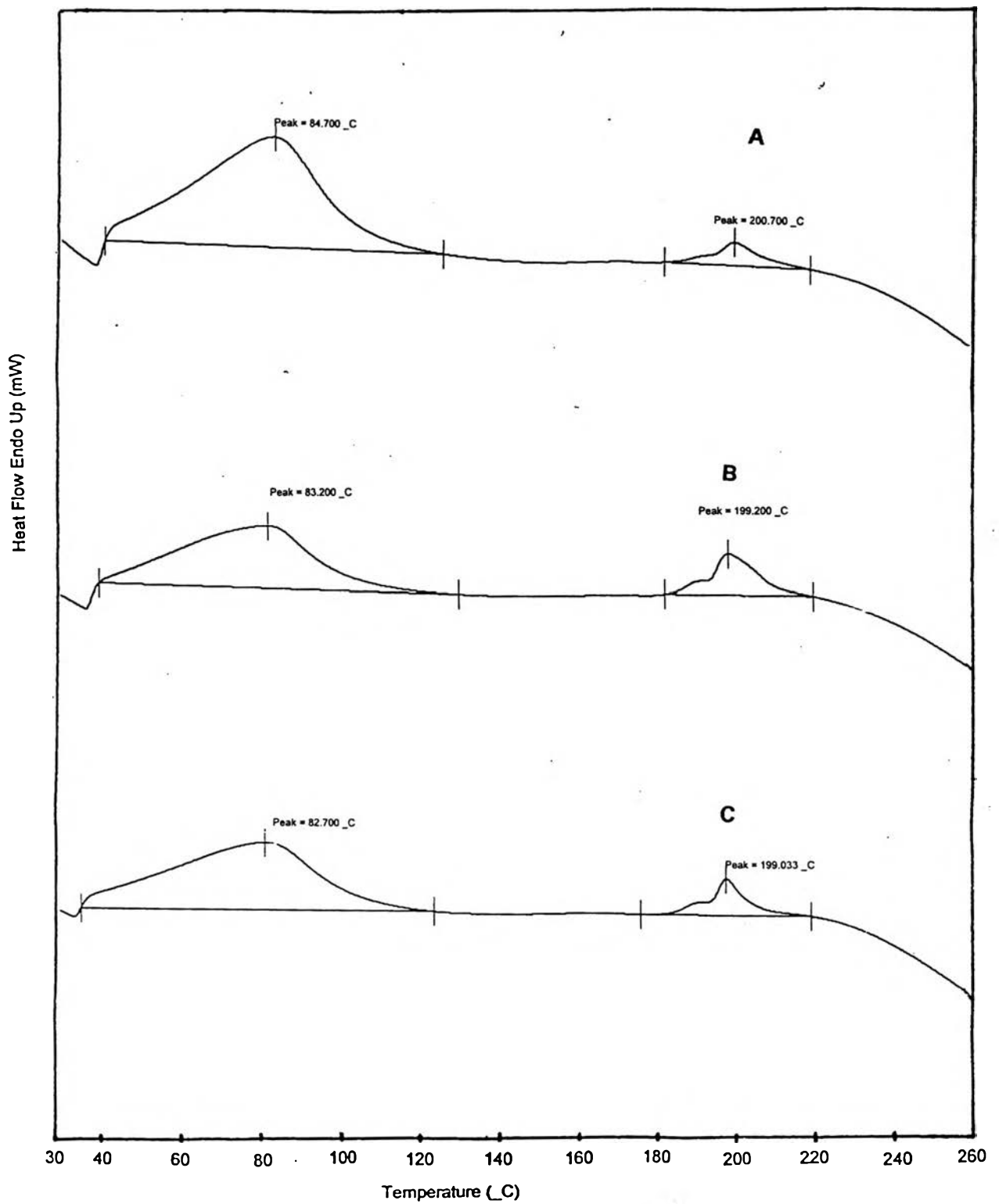


Figure 5F DSC thermograms of IB prepared by spray drying method, feed rate 20 ml/min
[(A) I20B130; (B) I10B140 and (C) I10B150]

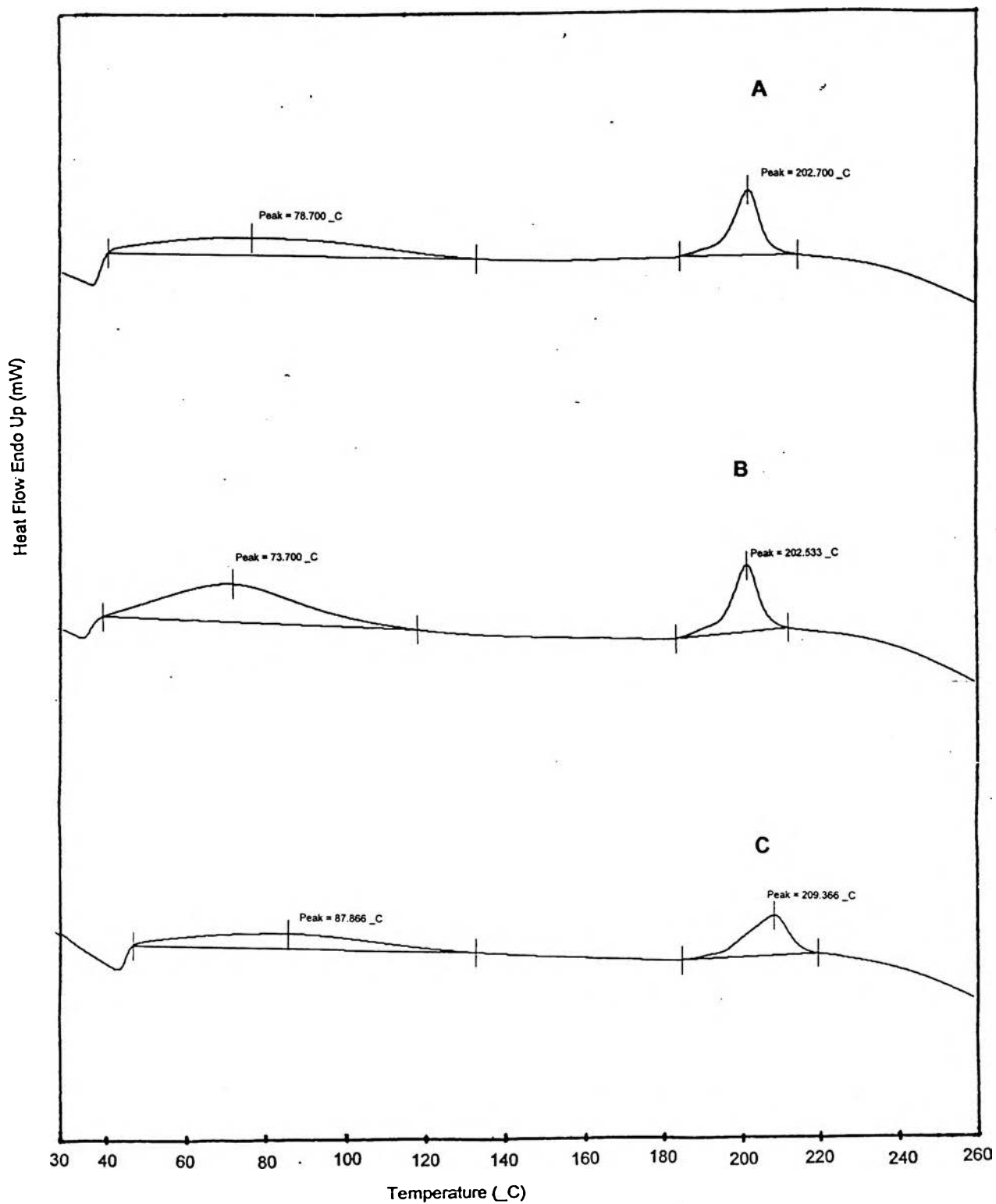


Figure 6F DSC thermograms of IBB prepared by spray drying method, feed rate 10 ml/min [(A) I10BB130; (B) I10BB140 and (C) I10BB150]

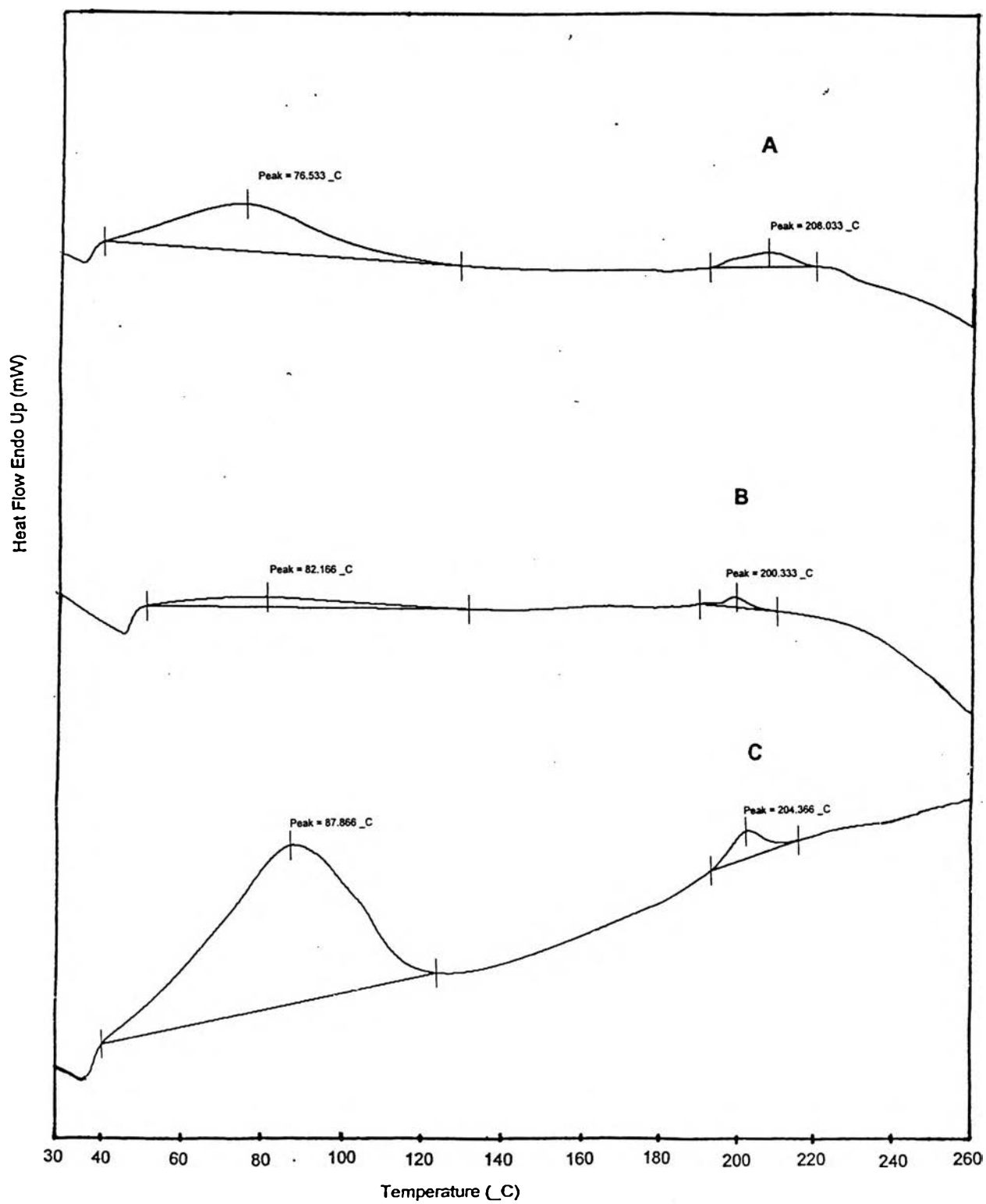


Figure 7F DSC thermograms of IBB prepared by spray drying method, feed rate 15 ml/min [(A) I15BB130; (B) I15BB140 and (C) I15BB150]

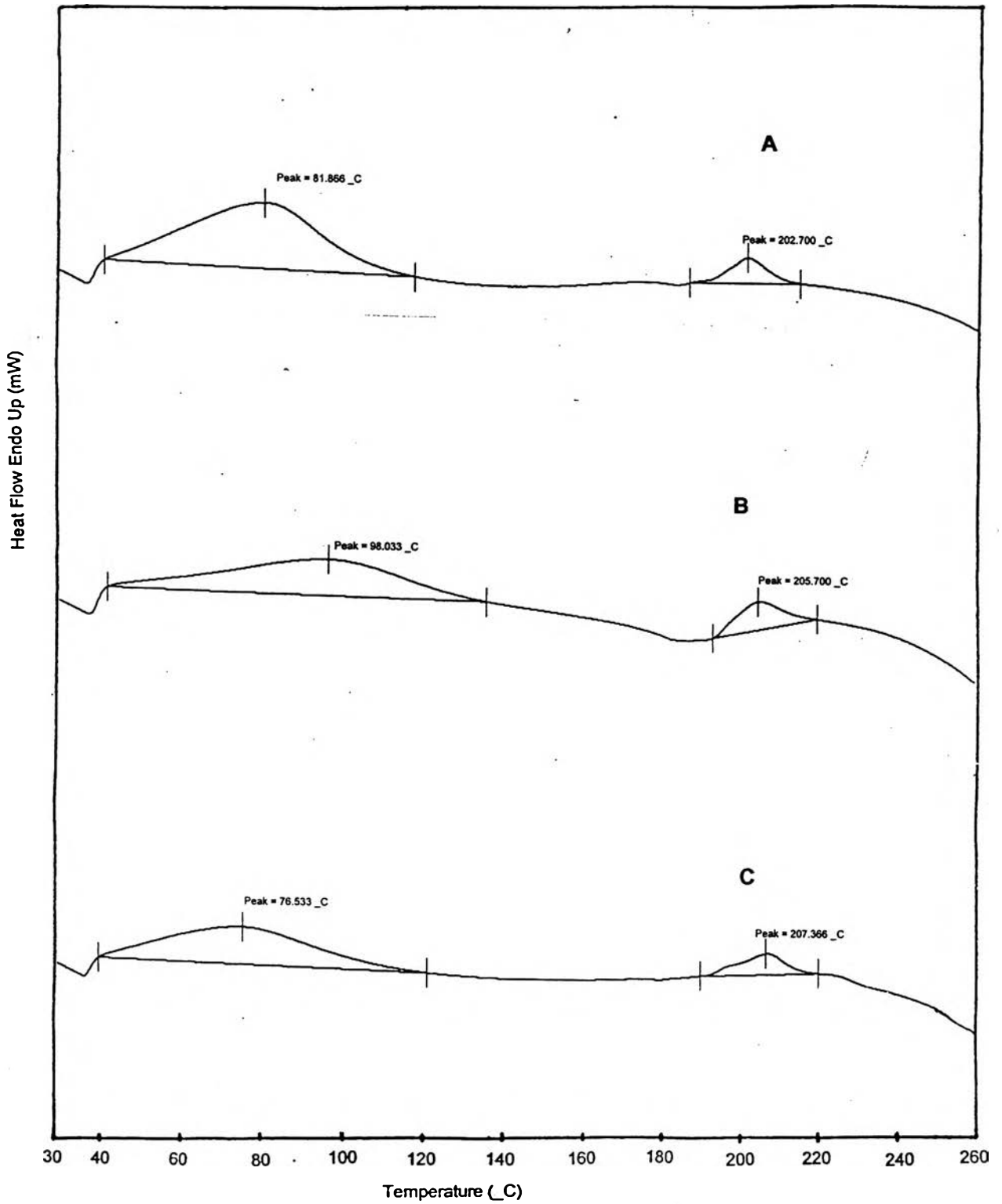


Figure 8G Infrared spectra in KBr pellet of IBB prepared by spray drying method, feed rate 20 ml/min [(A) I20BB130; (B) I20BB140 and (C) I20BB150]

APPENDICES G
FTIR SPECTRA OF SPRAY DRIED INDOMETHACIN
AND BETA CYCLODETRIN

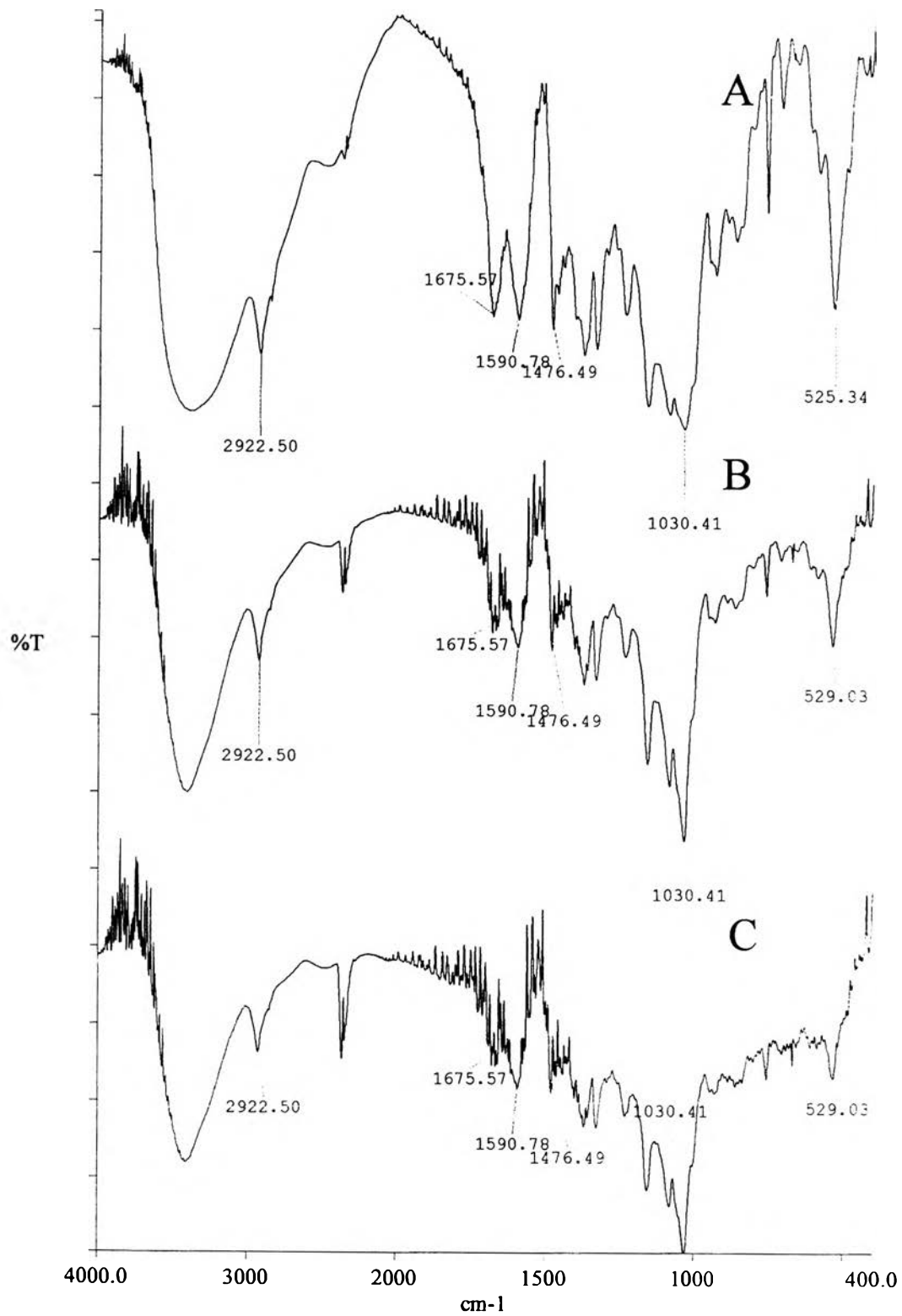


Figure 1G Infrared spectra in KBr pellet of IIB prepared by spray drying method, feed rate 10 ml/min [(A) II10B130; (B) II10B140 and (C) II10B150]

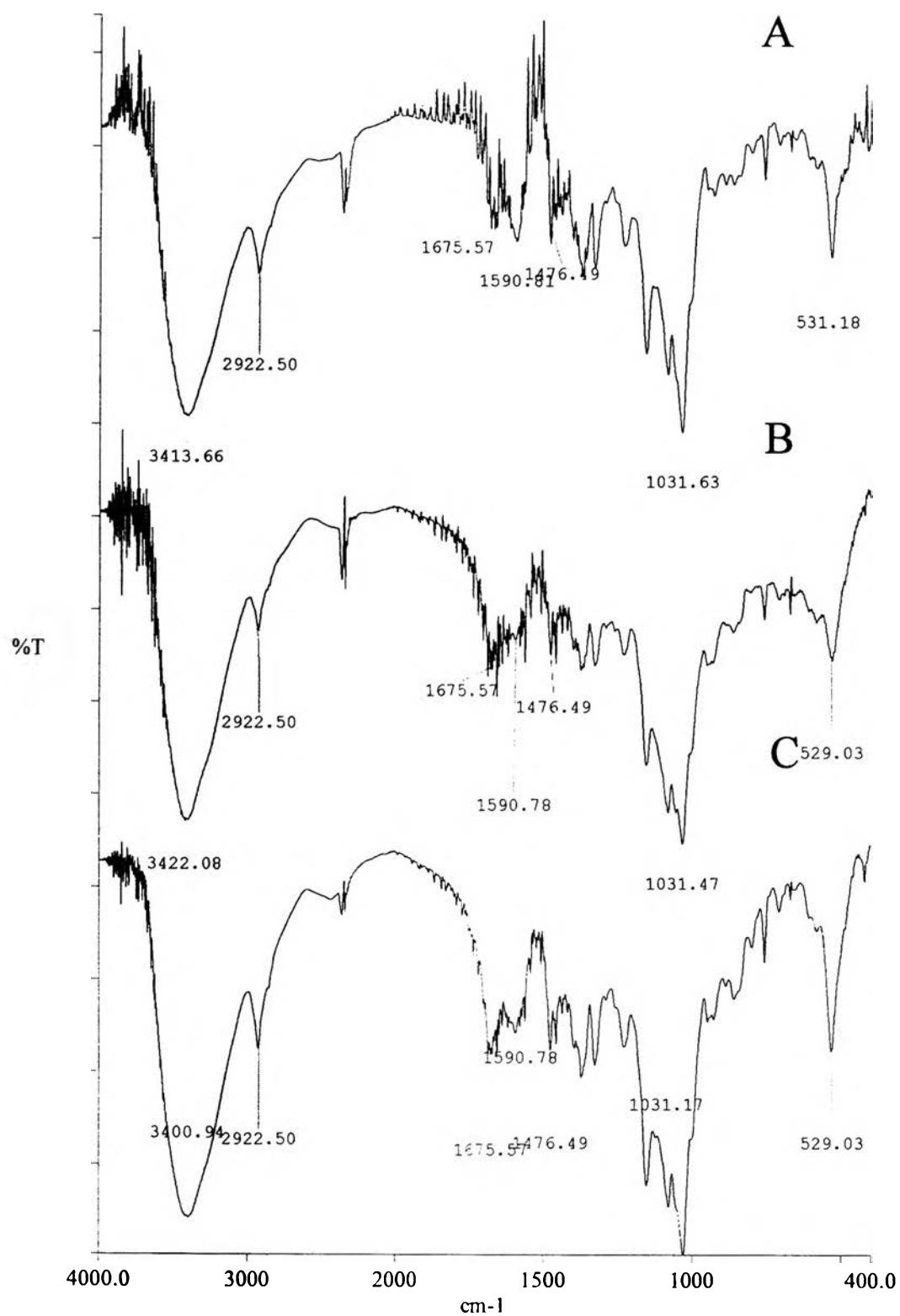


Figure 2G Infrared spectra in KBr pellet of IIB prepared by spray drying method, feed rate 15 ml/min [(A) II15B130; (B) II15B140 and (C) II15B150]

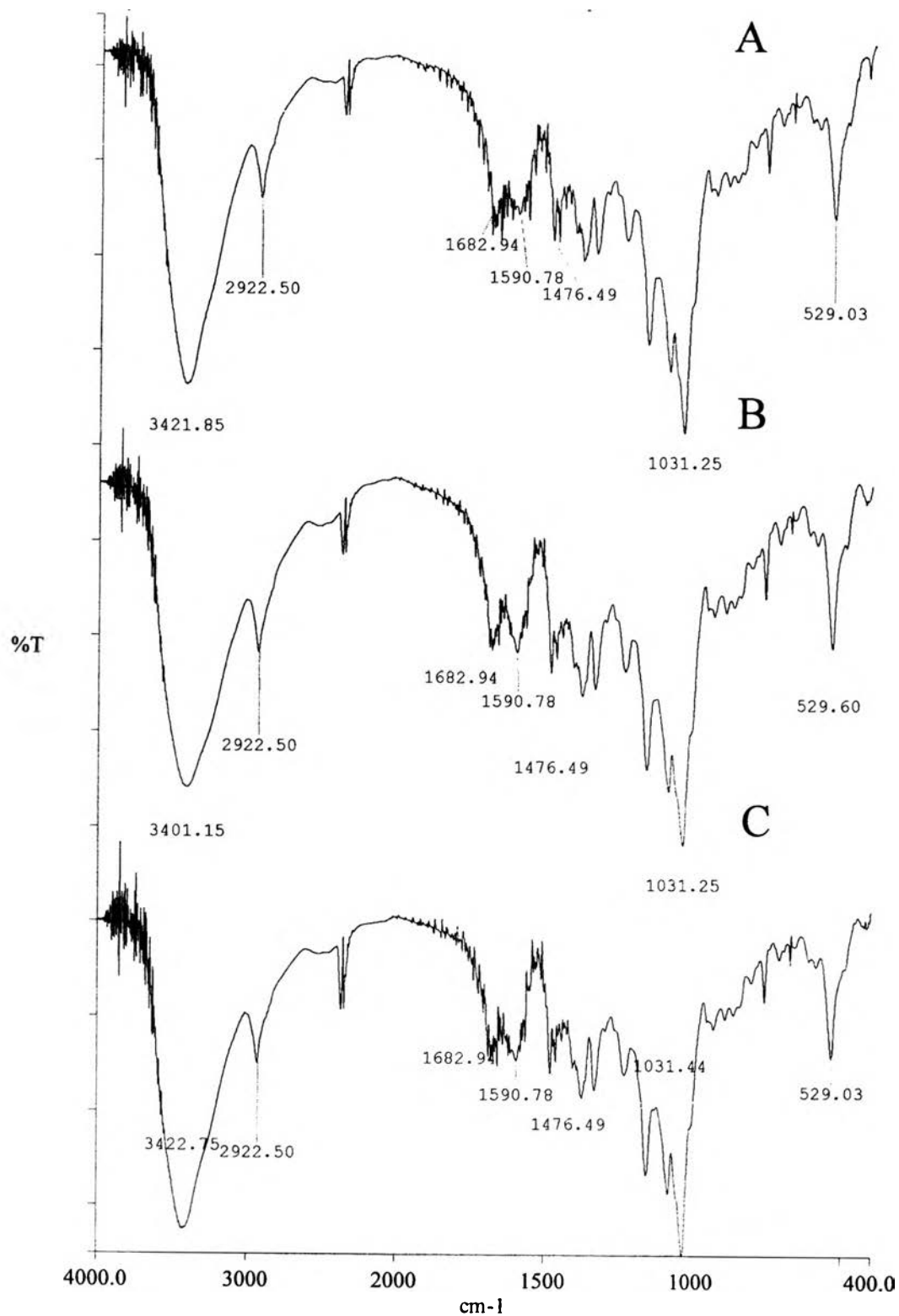


Figure 3G Infrared spectra in KBr pellet of IIB prepared by spray drying method, feed rate 20 ml/min [(A) I120B130; (B) I120B140 and (C) I120B150]

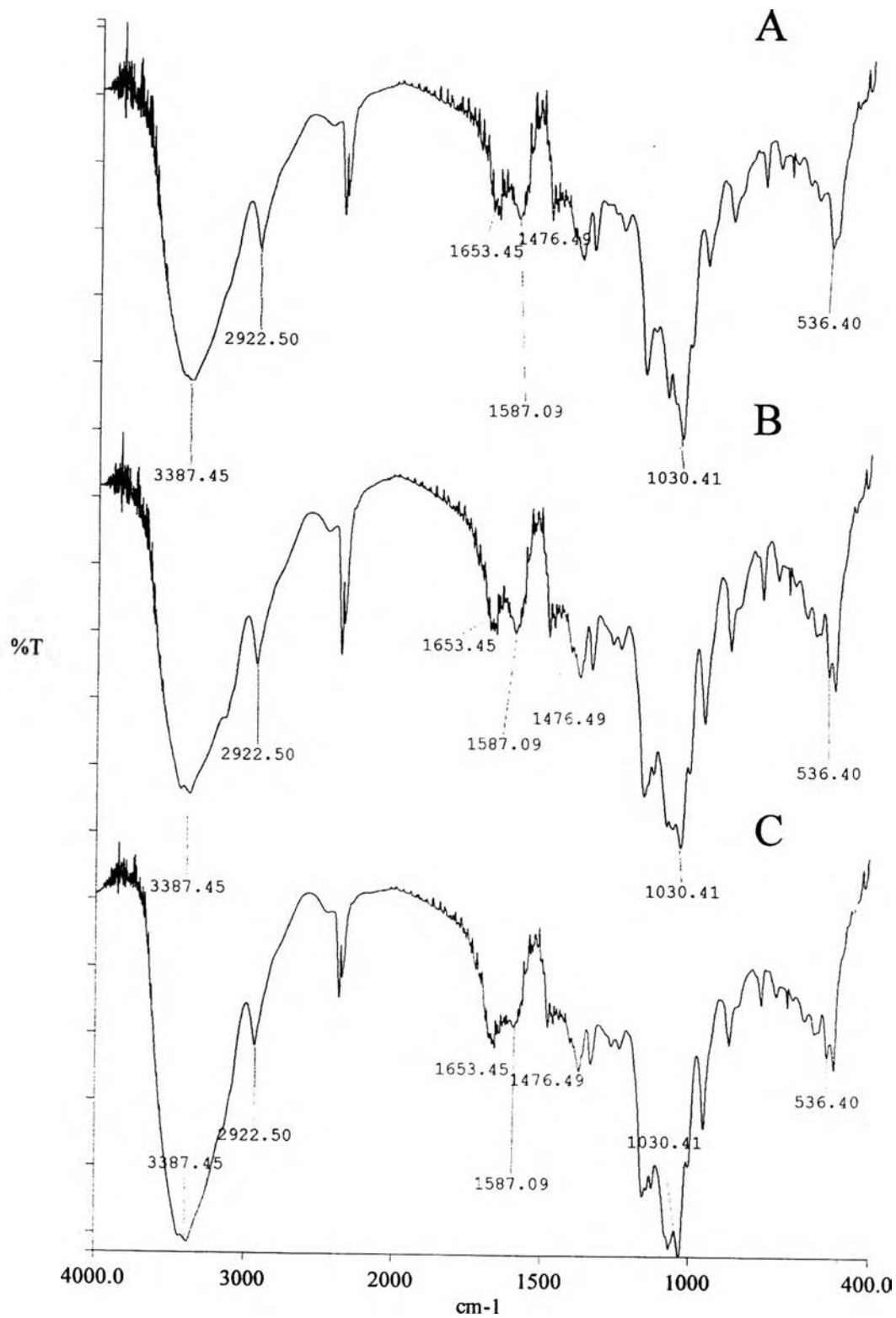


Figure 4G Infrared spectra in KBr pellet of IB prepared by spray drying method, feed rate 10 ml/min [(A) I10B130; (B) I10B140 and (C) I10B150]

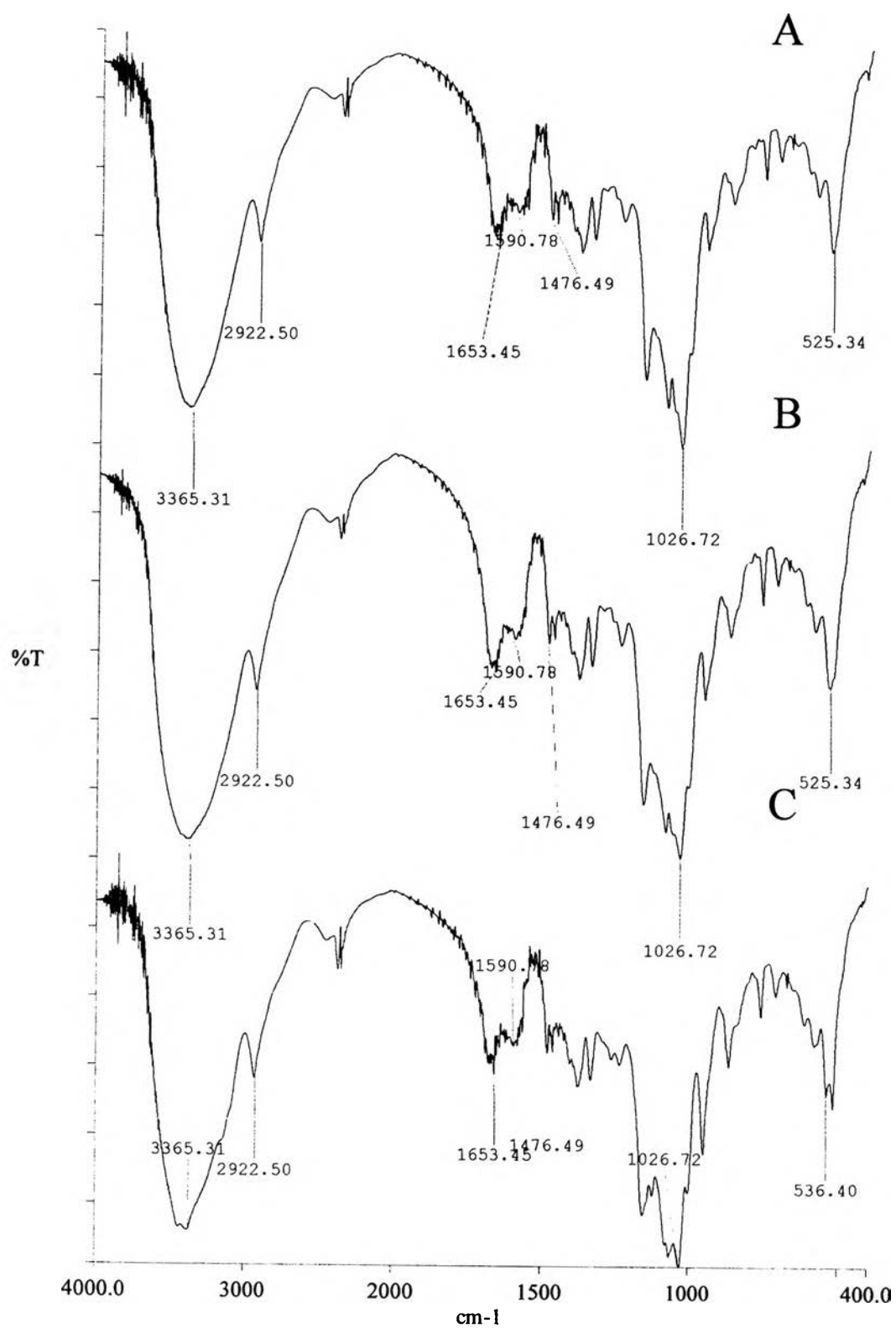


Figure 5G Infrared spectra in KBr pellet of IB prepared by spray drying method, feed rate 20 ml/min [(A) I20B130; (B) I20B140 and (C) I20B150]

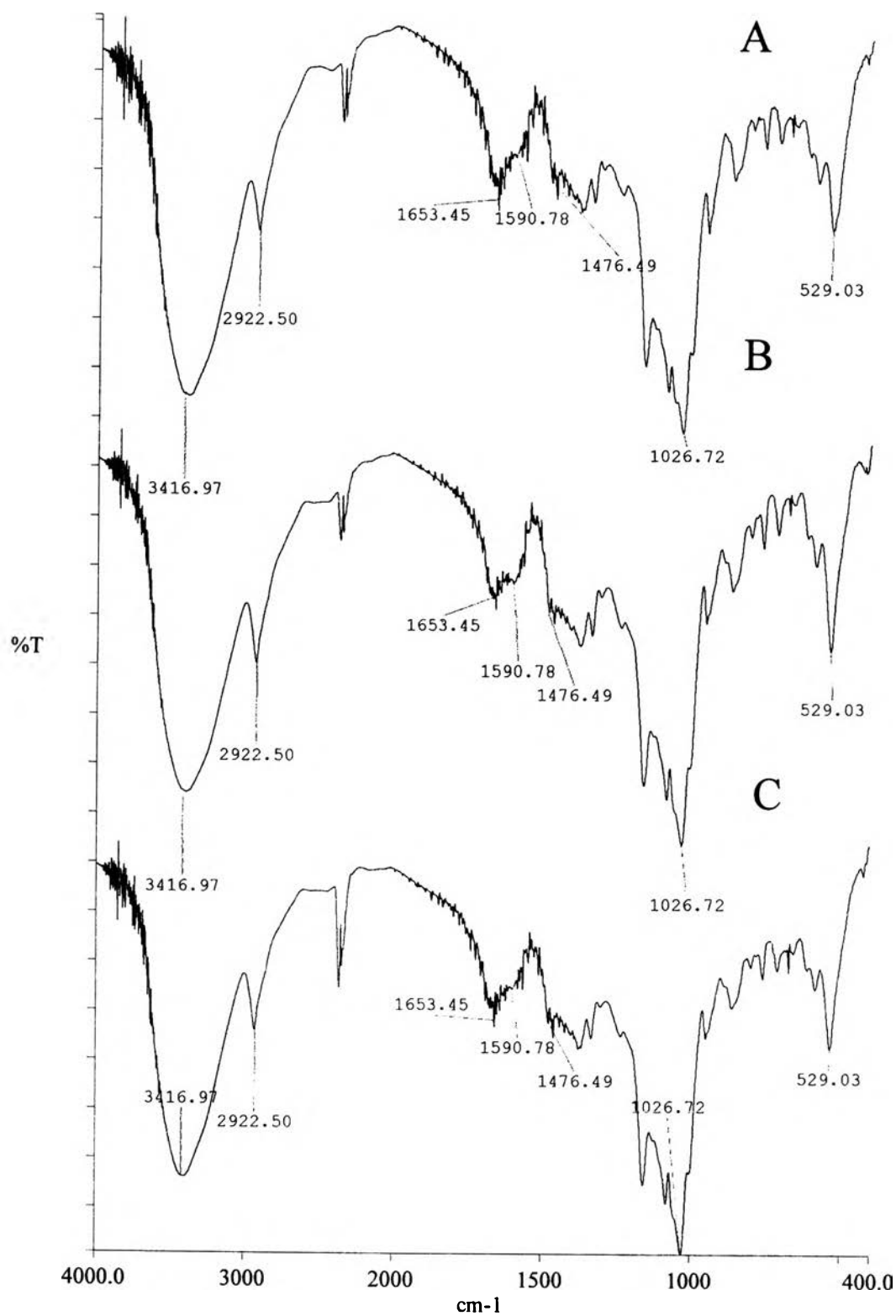


Figure 6G Infrared spectra in KBr pellet of IBB prepared by spray drying method, feed rate 10 ml/min [(A) I10BB130; (B) I10BB140 and (C) I10BB150]

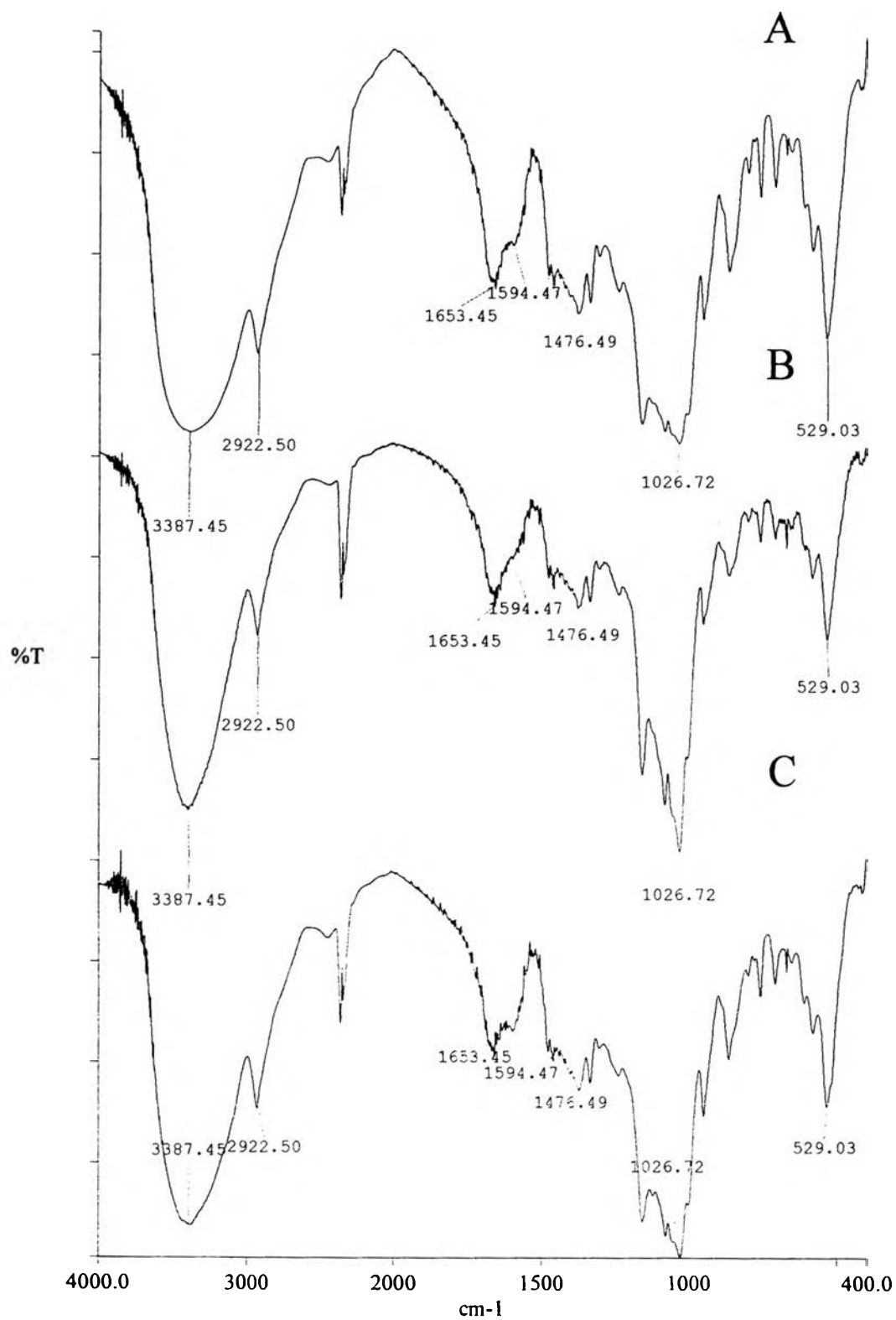


Figure 7G Infrared spectra in KBr pellet of IBB prepared by spray drying method, feed rate 15 ml/min [(A) I15BB130; (B) I15BB140 and (C) I15BB150]

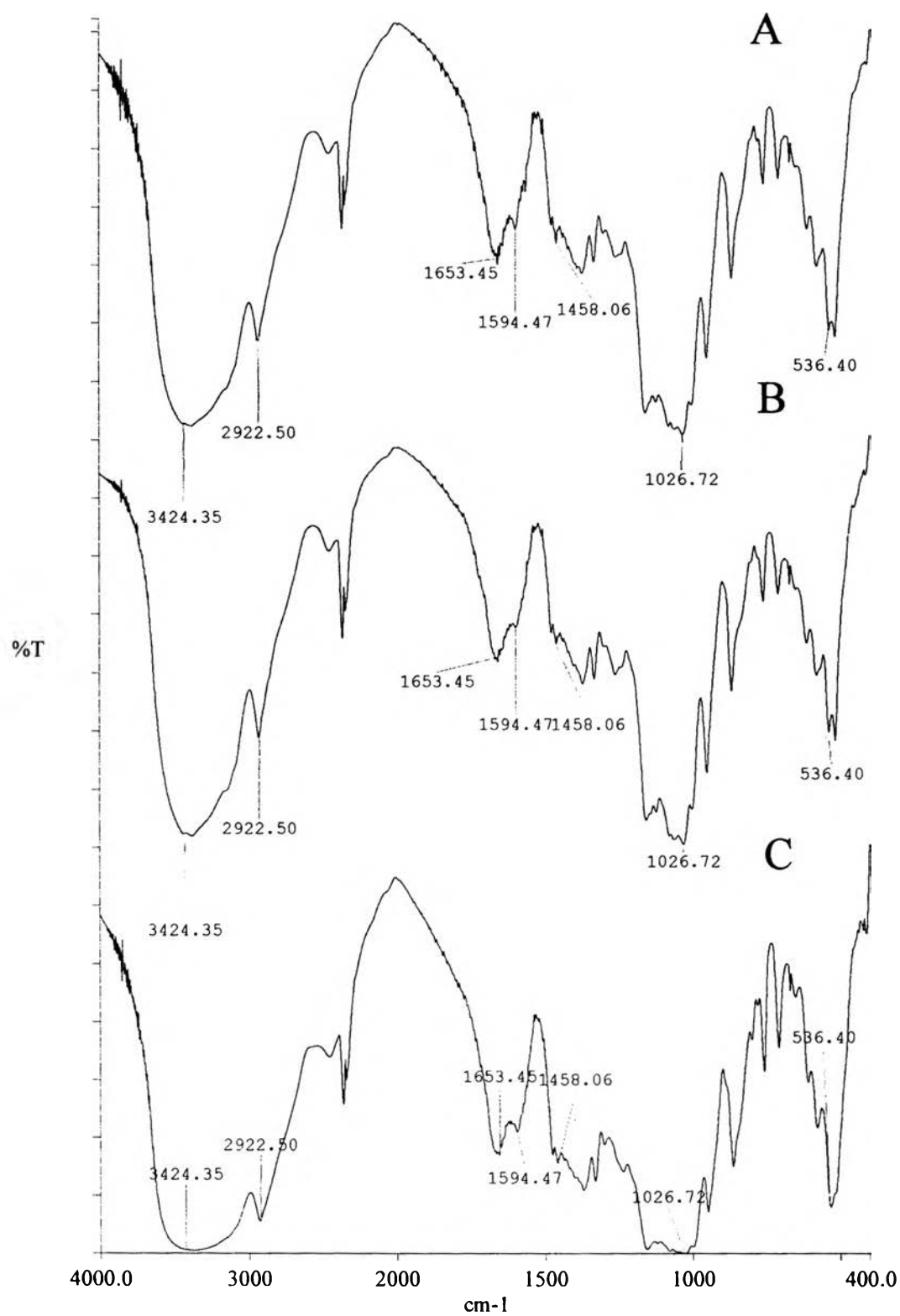


Figure 8G Infrared spectra in KBr pellet of IBB prepared by spray drying method, feed rate 20 ml/min [(A) I20BB130; (B) I20BB140 and (C) I20BB150]

APPENDIX H

Solubility of Indomethacin, Physical Mixtures and Spray Dried Products

TABLE 1H Solubility of IMC and Spray dried IMC in phosphate buffer pH 7.4

| Time (hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | |
|--------------|--|---------|---------|---------|--------|-----------------|----------|----------|----------|---------|
| | IMC | | | | | Spray dried IMC | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 932.68 | 1031.20 | 1014.78 | 992.88 | 52.78 | 4325.12 | 4423.65 | 4399.01 | 4382.59 | 51.27 |
| 1 | 1096.88 | 1113.30 | 1014.78 | 1074.99 | 52.78 | 9300.49 | 9349.75 | 9325.12 | 9325.12 | 24.63 |
| 2 | 1425.29 | 1277.50 | 1343.19 | 1348.66 | 74.04 | 12206.90 | 11812.81 | 11788.18 | 11935.96 | 234.96 |
| 4 | 1490.97 | 1277.50 | 1343.19 | 1370.55 | 109.33 | 12182.27 | 11960.59 | 11837.44 | 11993.43 | 174.74 |
| 6 | 1544.83 | 1594.09 | 1667.98 | 1602.30 | 61.99 | 12477.83 | 9965.52 | 9793.10 | 10745.48 | 1502.73 |
| 12 | 1845.32 | 1736.95 | 1909.36 | 1830.54 | 87.15 | 12354.68 | 10482.76 | 11221.67 | 11353.04 | 942.85 |
| 24 | 1717.24 | 1869.95 | 1786.21 | 1791.13 | 76.47 | 12256.16 | 12256.16 | 11073.89 | 11862.07 | 682.58 |
| 30 | 1933.99 | 1835.47 | 1840.39 | 1869.95 | 55.51 | 12256.16 | 12231.53 | 11960.59 | 12149.43 | 164.00 |
| 48 | 1830.54 | 1840.39 | 1722.17 | 1797.70 | 65.60 | 12280.79 | 12231.53 | 11960.59 | 12157.64 | 172.41 |
| 72 | 1771.43 | 1963.55 | 1751.72 | 1828.90 | 117.02 | 12256.16 | 12059.11 | 12034.48 | 12116.58 | 121.50 |

TABLE 2H Solubility of IB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I10B130 | | | | | I10B140 | | | | | I10B150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 20541.87 | 21157.64 | 20788.18 | 20829.23 | 309.93 | 23004.93 | 23066.50 | 23251.23 | 23107.55 | 128.18 | 36859.61 | 27068.97 | 21588.67 | 28505.75 | 7736.19 |
| 1 | 20849.75 | 21773.40 | 33103.45 | 25242.20 | 6823.69 | 26576.35 | 27315.27 | 26945.81 | 26945.81 | 369.46 | 37475.37 | 27931.03 | 25160.10 | 30188.83 | 6460.63 |
| 2 | 38891.63 | 37229.06 | 44802.96 | 40307.88 | 3980.61 | 35443.35 | 39568.97 | 39014.78 | 38009.03 | 2239.16 | 40960.59 | 40960.59 | 41453.20 | 41124.79 | 284.41 |
| 4 | 40837.44 | 37389.16 | 41576.35 | 39934.32 | 2234.92 | 40837.44 | 36773.40 | 32586.21 | 36732.35 | 4125.77 | 40960.59 | 39729.06 | 46502.46 | 42397.37 | 3608.05 |
| 6 | 43300.49 | 37758.62 | 38867.00 | 39975.37 | 2932.48 | 42068.97 | 37758.62 | 40098.52 | 39975.37 | 2157.81 | 40960.59 | 45886.70 | 49088.67 | 45311.99 | 4094.40 |
| 12 | 45394.09 | 37389.16 | 42438.42 | 41740.56 | 4047.84 | 40467.98 | 33325.12 | 41330.05 | 38374.38 | 4393.98 | 40960.59 | 48596.06 | 48842.38 | 46133.00 | 4481.13 |
| 24 | 42192.12 | 47610.84 | 42068.97 | 43957.31 | 3164.65 | 25689.66 | 33571.43 | 36280.79 | 31847.29 | 5502.05 | 40960.59 | 46625.62 | 53399.01 | 46995.07 | 6227.44 |
| 30 | 43177.34 | 35172.41 | 30246.31 | 36198.69 | 6526.32 | 31724.14 | 35788.18 | 31724.14 | 33078.82 | 2346.37 | 40960.59 | 54753.69 | 47733.99 | 47816.09 | 6896.92 |
| 48 | 43793.10 | 41699.51 | 47980.30 | 44490.97 | 3198.02 | 45640.39 | 40467.98 | 41699.51 | 42602.63 | 2701.89 | 40960.59 | 51182.27 | 53275.86 | 48472.91 | 6589.53 |
| 72 | 58860.84 | 42931.03 | 49827.59 | 50539.82 | 7988.75 | 46379.31 | 42192.12 | 43054.19 | 43875.21 | 2211.04 | 40960.59 | 51305.42 | 53768.47 | 48678.16 | 6796.13 |

TABLE 3H Solubility of IB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I15B130 | | | | | I15B140 | | | | | I15B150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 18694.58 | 21157.64 | 20788.18 | 20213.46 | 1328.30 | 19310.34 | 20603.45 | 20541.87 | 20151.89 | 729.45 | 18694.58 | 20911.33 | 18509.85 | 19371.92 | 1336.36 |
| 1 | 19187.19 | 21773.40 | 33103.45 | 24688.01 | 7401.81 | 25344.83 | 25467.98 | 25714.29 | 25509.03 | 188.12 | 20295.57 | 21773.40 | 19310.34 | 20459.77 | 1239.71 |
| 2 | 31317.73 | 37229.06 | 44802.96 | 37783.25 | 6759.67 | 39692.12 | 34704.43 | 37967.98 | 37454.84 | 2533.13 | 36674.88 | 40862.07 | 44802.96 | 40779.97 | 4064.66 |
| 4 | 32733.99 | 37389.16 | 41576.35 | 37233.17 | 4423.25 | 40837.44 | 39359.61 | 40714.29 | 40303.78 | 819.99 | 37635.47 | 37266.01 | 37635.47 | 37512.32 | 213.31 |
| 6 | 38583.74 | 37758.62 | 38867.00 | 38403.12 | 575.84 | 32463.05 | 44285.71 | 40837.44 | 39195.40 | 6079.97 | 38867.00 | 37758.62 | 38867.00 | 38497.54 | 639.92 |
| 12 | 45541.87 | 37389.16 | 42438.42 | 41789.82 | 4114.87 | 37635.47 | 40098.52 | 37881.77 | 38538.59 | 1356.54 | 44778.33 | 37389.16 | 42438.42 | 41535.30 | 3776.46 |
| 24 | 47241.38 | 47610.84 | 42068.97 | 45640.39 | 3098.46 | 35541.87 | 40837.44 | 40591.13 | 38990.15 | 2988.83 | 40221.67 | 47610.84 | 42068.97 | 43300.49 | 3845.44 |
| 30 | 47857.14 | 35172.41 | 30246.31 | 37758.62 | 9085.80 | 41945.81 | 36527.09 | 46009.85 | 41494.25 | 4757.48 | 43054.19 | 35172.41 | 30246.31 | 36157.64 | 6460.53 |
| 48 | 56847.29 | 41699.51 | 47980.30 | 48842.36 | 7610.60 | 34926.11 | 36773.40 | 43546.80 | 38415.44 | 4538.86 | 42931.03 | 41699.51 | 47980.30 | 44203.61 | 3328.16 |
| 72 | 44778.33 | 42931.03 | 49827.59 | 45845.65 | 3570.01 | 35788.18 | 42192.12 | 43054.19 | 40344.83 | 3969.65 | 43546.80 | 42931.03 | 49827.59 | 45435.14 | 3816.41 |

TABLE 4H Solubility of IB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I20B130 | | | | | I20B140 | | | | | I20B150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 35812.81 | 28854.68 | 29408.87 | 31358.78 | 3867.24 | 33598.06 | 34458.13 | 33041.87 | 33698.69 | 713.68 | 34150.25 | 33103.45 | 35568.50 | 34273.40 | 1236.14 |
| 1 | 41822.66 | 41945.81 | 41576.35 | 41781.61 | 188.12 | 37266.01 | 38743.84 | 37266.01 | 37758.62 | 853.23 | 39975.37 | 37266.01 | 38743.84 | 38661.74 | 1356.54 |
| 2 | 40098.52 | 40467.98 | 41083.74 | 40550.08 | 497.72 | 39236.45 | 33201.97 | 36896.55 | 36444.99 | 3042.48 | 41330.05 | 43546.80 | 41822.66 | 42233.17 | 1163.99 |
| 4 | 42931.03 | 45270.94 | 38004.93 | 42088.97 | 3708.92 | 44532.02 | 37266.01 | 38374.38 | 40057.47 | 3914.50 | 41576.35 | 39482.76 | 43916.26 | 41658.46 | 2217.89 |
| 6 | 48226.60 | 50935.96 | 45394.09 | 48185.55 | 2771.16 | 37142.86 | 40467.98 | 42561.58 | 40057.47 | 2732.58 | 42684.73 | 45763.55 | 48596.06 | 45681.44 | 2956.52 |
| 12 | 47980.30 | 45270.94 | 39113.30 | 44121.51 | 4543.87 | 43177.34 | 43423.65 | 46748.77 | 44449.92 | 1994.67 | 48226.60 | 51059.11 | 44162.56 | 47816.09 | 3466.55 |
| 24 | 43054.19 | 36157.64 | 55738.92 | 44983.58 | 9932.20 | 49827.59 | 44901.48 | 41576.35 | 45435.14 | 4151.42 | 43793.10 | 46379.31 | 46256.16 | 45476.19 | 1458.90 |
| 30 | 41330.05 | 45394.09 | 45763.55 | 44162.56 | 2459.97 | 54384.24 | 44162.56 | 35049.28 | 44532.02 | 9672.78 | 46379.31 | 51428.57 | 48226.60 | 48678.16 | 2554.74 |
| 48 | 46625.62 | 40714.29 | 45517.24 | 44285.71 | 3142.20 | 41945.81 | 43916.26 | 36157.64 | 40673.23 | 4032.82 | 46625.62 | 46625.62 | 44285.71 | 45845.65 | 1350.94 |
| 72 | 46748.77 | 39482.76 | 45886.70 | 44039.41 | 3969.65 | 42315.27 | 43300.49 | 36773.40 | 40796.39 | 3518.66 | 47733.99 | 46502.46 | 45024.63 | 46420.36 | 1356.54 |

TABLE 5H Solubility of IBB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I10BB130 | | | | | I10BB140 | | | | | I10BB150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 6788.18 | 5655.17 | 4029.56 | 5490.97 | 1386.62 | 5310.34 | 5162.56 | 4645.32 | 5039.41 | 349.20 | 6270.94 | 6517.24 | 7009.85 | 6599.34 | 376.24 |
| 1 | 11714.29 | 8118.23 | 8955.67 | 9596.06 | 1881.62 | 9004.93 | 8118.23 | 8216.75 | 8446.63 | 486.00 | 8980.30 | 9472.91 | 9965.52 | 9472.91 | 492.61 |
| 2 | 14177.34 | 13044.33 | 13758.62 | 13660.10 | 572.89 | 15778.33 | 15285.71 | 17083.74 | 16049.26 | 929.13 | 15778.33 | 15285.71 | 17083.74 | 16049.26 | 929.13 |
| 4 | 19596.06 | 17330.05 | 17182.27 | 18036.12 | 1352.96 | 18807.88 | 18266.01 | 17871.92 | 18313.27 | 469.92 | 18807.88 | 18266.01 | 17871.92 | 18315.27 | 469.92 |
| 6 | 18571.43 | 19371.92 | 22635.47 | 20192.94 | 2152.83 | 22019.70 | 22820.20 | 23559.11 | 22799.67 | 769.91 | 22019.70 | 22820.20 | 23559.11 | 22799.67 | 769.91 |
| 12 | 22081.28 | 20849.75 | 20849.75 | 21260.26 | 711.02 | 22943.35 | 26022.17 | 24174.88 | 24380.13 | 1549.64 | 22019.70 | 26022.17 | 24174.88 | 24072.25 | 2003.20 |
| 24 | 18388.70 | 17524.63 | 17832.51 | 17914.61 | 438.86 | 19618.23 | 21527.09 | 21157.64 | 20767.65 | 1012.43 | 22019.70 | 21527.09 | 21157.64 | 21568.14 | 432.50 |
| 30 | 18448.28 | 17709.38 | 17463.05 | 17873.58 | 512.73 | 19802.96 | 18879.31 | 22573.89 | 20418.72 | 1922.72 | 22019.70 | 18879.31 | 22573.89 | 21157.64 | 1992.45 |
| 48 | 17832.51 | 17647.78 | 19064.04 | 18181.44 | 769.91 | 25036.95 | 18879.31 | 19002.46 | 20972.91 | 3520.10 | 22019.70 | 18879.31 | 19002.46 | 19967.16 | 1778.62 |
| 72 | 17586.21 | 19371.92 | 18325.12 | 18427.75 | 897.27 | 27992.61 | 19002.46 | 20110.84 | 22368.64 | 4901.93 | 22019.70 | 19002.46 | 20110.84 | 20377.67 | 1526.22 |

TABLE 6H Solubility of IBB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I15BB130 | | | | | I15BB140 | | | | | I15BB150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 8349.75 | 7980.30 | 9458.13 | 8596.06 | 769.09 | 8965.52 | 9827.59 | 9273.40 | 9355.50 | 436.88 | 4571.43 | 4916.26 | 4768.47 | 4752.05 | 173.00 |
| 1 | 12044.33 | 15985.22 | 13152.71 | 13727.42 | 2032.33 | 13275.86 | 12906.40 | 12721.67 | 12967.98 | 282.18 | 6788.18 | 7379.31 | 8955.67 | 7707.72 | 1120.44 |
| 2 | 17032.02 | 17216.75 | 16477.83 | 16908.87 | 384.54 | 18017.24 | 15554.19 | 16354.68 | 16642.04 | 1256.42 | 12970.44 | 11394.09 | 11935.96 | 12100.16 | 800.90 |
| 4 | 14507.39 | 16785.71 | 13830.05 | 15041.05 | 1548.41 | 22758.62 | 19310.34 | 20357.14 | 20808.70 | 1767.93 | 22157.64 | 16763.55 | 19177.34 | 19366.17 | 2702.00 |
| 6 | 20233.99 | 18571.43 | 17647.78 | 18817.73 | 1310.58 | 24174.88 | 23189.66 | 23004.93 | 23456.49 | 628.96 | 22573.89 | 21034.48 | 21280.79 | 21629.72 | 826.90 |
| 12 | 17339.90 | 18263.55 | 17524.63 | 17709.36 | 488.75 | 22697.04 | 21650.25 | 21219.21 | 21855.50 | 760.00 | 21157.64 | 20357.14 | 20849.75 | 20788.18 | 403.78 |
| 24 | 14938.42 | 16662.56 | 19433.50 | 17011.49 | 2267.76 | 23004.93 | 19741.38 | 24667.49 | 22471.26 | 2506.04 | 20295.57 | 14384.24 | 16416.26 | 17032.02 | 3003.39 |
| 30 | 18140.39 | 21588.67 | 17155.17 | 18961.41 | 2327.99 | 25899.01 | 23128.08 | 19002.46 | 22676.52 | 3470.38 | 20541.87 | 18509.85 | 20603.45 | 19885.06 | 1191.36 |
| 48 | 17770.94 | 15985.22 | 16477.83 | 16744.66 | 922.28 | 22697.04 | 21034.48 | 24975.37 | 22902.30 | 1978.44 | 19864.53 | 17524.63 | 19987.68 | 19125.62 | 1387.86 |
| 72 | 18386.70 | 17524.63 | 16169.95 | 17360.43 | 1117.46 | 25467.98 | 23435.96 | 24298.03 | 24400.66 | 1019.89 | 19433.50 | 19495.07 | 19679.80 | 19536.12 | 128.18 |

TABLE 7H Solubility of IBB in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | I20BB130 | | | | | I20BB140 | | | | | I20BB150 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 4078.82 | 3832.51 | 4399.01 | 4103.45 | 284.05 | 4078.82 | 3586.21 | 4029.56 | 3898.19 | 271.31 | 3832.51 | 4078.82 | 4152.71 | 4021.35 | 167.66 |
| 1 | 5802.96 | 6485.22 | 6000.00 | 6096.06 | 351.13 | 5558.85 | 5310.34 | 5753.69 | 5540.23 | 222.13 | 5802.96 | 5556.65 | 5753.69 | 5704.43 | 130.33 |
| 2 | 10729.06 | 10855.17 | 10482.76 | 10622.33 | 128.39 | 9448.28 | 8660.10 | 9571.43 | 9228.60 | 494.45 | 10729.06 | 10901.48 | 9793.10 | 10474.55 | 596.41 |
| 4 | 14645.32 | 14448.28 | 10827.59 | 13307.06 | 2149.55 | 13093.60 | 11295.57 | 15162.56 | 13183.91 | 1935.08 | 13438.42 | 13980.30 | 13881.77 | 13766.83 | 288.64 |
| 6 | 18241.38 | 16418.72 | 17403.94 | 17354.68 | 912.33 | 20556.65 | 16443.35 | 18561.58 | 18520.53 | 2056.96 | 18758.62 | 16738.92 | 18807.88 | 18101.81 | 1180.55 |
| 12 | 21465.52 | 19926.11 | 20972.91 | 20788.18 | 786.15 | 19864.53 | 15123.15 | 18940.89 | 17976.19 | 2513.59 | 19802.96 | 21958.13 | 20233.99 | 20665.02 | 1140.41 |
| 24 | 18879.31 | 18694.58 | 19433.50 | 19002.46 | 384.54 | 18325.12 | 20911.33 | 17647.78 | 18961.41 | 1722.30 | 19987.68 | 16662.56 | 19926.11 | 18858.78 | 1902.23 |
| 30 | 20172.41 | 19310.34 | 21896.55 | 20459.77 | 1316.83 | 21773.40 | 19248.77 | 20049.26 | 20357.14 | 1290.17 | 21650.25 | 19002.46 | 22327.59 | 20993.43 | 1757.18 |
| 48 | 17463.05 | 16293.10 | 18571.43 | 17442.53 | 1139.30 | 16847.29 | 18386.70 | 17524.63 | 17586.21 | 771.55 | 19556.65 | 18201.97 | 18017.24 | 18591.95 | 840.54 |
| 72 | 17586.21 | 17093.60 | 17155.17 | 17278.33 | 268.41 | 18078.82 | 19002.46 | 16847.29 | 17976.19 | 1081.25 | 18448.28 | 19694.58 | 19926.11 | 19022.99 | 791.76 |

TABLE 8H Solubility of IMC/BCD physical mixtures in phosphate buffer pH 7.4

| Times (Hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | | | | | | |
|------------------|--|---------|----------|---------|---------|----------|---------|----------|----------|--------|---------|---------|---------|---------|--------|
| | IIB(PM) | | | | | IB(PM) | | | | | IBB(PM) | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 2970.44 | 3044.33 | 3142.86 | 3052.55 | 86.50 | 3044.33 | 3290.64 | 3389.16 | 3241.38 | 177.61 | 3044.33 | 3142.86 | 3167.49 | 3118.23 | 65.17 |
| 1 | 4054.19 | 4128.08 | 4078.82 | 4087.03 | 37.62 | 4054.19 | 4029.56 | 4103.45 | 4062.40 | 37.62 | 3290.64 | 3167.49 | 3266.01 | 3241.38 | 65.17 |
| 2 | 5162.56 | 5729.06 | 5211.82 | 5367.82 | 313.82 | 6517.24 | 6443.35 | 6467.98 | 6476.19 | 37.62 | 5261.08 | 4867.00 | 5137.93 | 5088.67 | 201.61 |
| 4 | 6591.13 | 6911.33 | 7059.11 | 6853.86 | 239.22 | 7921.18 | 8142.86 | 7921.18 | 7995.07 | 127.98 | 7921.18 | 7699.51 | 7551.72 | 7724.14 | 185.96 |
| 6 | 8093.60 | 8586.21 | 10113.30 | 8931.03 | 1053.08 | 7600.99 | 7699.51 | 7551.72 | 7617.41 | 75.25 | 7527.09 | 7970.44 | 7773.40 | 7756.98 | 222.13 |
| 12 | 8733.99 | 8857.14 | 8290.64 | 8627.26 | 297.95 | 8019.70 | 8192.12 | 8019.70 | 8077.18 | 99.54 | 7527.09 | 8266.01 | 7847.29 | 7880.13 | 370.55 |
| 24 | 7871.92 | 7945.81 | 9399.01 | 8405.58 | 861.13 | 8536.95 | 8857.14 | 10113.30 | 9169.13 | 833.20 | 7403.94 | 8044.33 | 8118.23 | 7855.50 | 392.80 |
| 30 | 8339.90 | 8684.73 | 9842.36 | 8955.67 | 787.02 | 10261.08 | 9719.21 | 9177.34 | 9719.21 | 541.87 | 7798.03 | 7871.92 | 8315.27 | 7995.07 | 279.75 |
| 48 | 9029.56 | 8290.64 | 9522.17 | 8947.45 | 619.86 | 10655.17 | 8857.14 | 9152.71 | 9555.01 | 964.16 | 8413.79 | 8315.27 | 8339.90 | 8356.32 | 51.27 |
| 72 | 9448.28 | 8733.99 | 10113.30 | 9431.86 | 689.80 | 10630.54 | 9916.26 | 10113.30 | 10220.03 | 368.91 | 7724.14 | 7453.20 | 8118.23 | 7765.19 | 334.41 |

TABLE 9H Solubility of IS in phosphate buffer pH 7.4

| Time (hours) | Concentration of Indomethacin: (x 10 ⁻³ mcg/ml) | | | | | | | | | |
|--------------|--|----------|----------|----------|---------|----------|----------|----------|----------|---------|
| | IS13 | | | | | IS20 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 14384.24 | 14568.97 | 15000.00 | 14651.07 | 315.99 | 20541.87 | 20233.99 | 20480.30 | 20418.72 | 162.92 |
| 1 | 19310.34 | 19926.11 | 20541.87 | 19926.11 | 615.76 | 25467.98 | 25775.86 | 25714.29 | 25652.71 | 162.92 |
| 2 | 30147.78 | 22943.35 | 28731.53 | 27274.22 | 3816.91 | 39137.93 | 32056.65 | 40800.49 | 37331.69 | 4643.34 |
| 4 | 28854.68 | 19248.77 | 25591.13 | 24564.86 | 4884.50 | 37512.32 | 32832.51 | 35788.18 | 35377.67 | 2366.75 |
| 6 | 27438.42 | 23620.69 | 26330.05 | 25796.39 | 1964.02 | 35541.87 | 34187.19 | 33940.89 | 34556.65 | 862.07 |
| 12 | 27746.31 | 23867.00 | 24359.61 | 25324.30 | 2111.93 | 30000.00 | 32463.05 | 27906.40 | 30123.15 | 2280.82 |
| 24 | 29408.87 | 26022.17 | 25529.56 | 26986.86 | 2111.93 | 21009.85 | 20886.70 | 21009.85 | 20968.80 | 71.10 |
| 30 | 15677.34 | 13460.59 | 13091.13 | 14076.35 | 1398.75 | 16822.66 | 18669.95 | 15837.44 | 17110.02 | 1437.95 |
| 48 | 12650.25 | 10655.17 | 11665.02 | 11656.81 | 997.56 | 16785.71 | 15246.31 | 16416.26 | 16149.43 | 803.64 |
| 72 | 10901.48 | 11443.35 | 11689.66 | 11344.83 | 403.22 | 14938.42 | 17032.02 | 14630.54 | 15533.66 | 1306.72 |

TABLE 10H Solubility of IS in phosphate buffer pH 7.4

| Time (hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | |
|--------------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | IS27 | | | | | IS33 | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 6492.61 | 5827.59 | 6246.31 | 6188.83 | 336.22 | 6246.31 | 6320.20 | 6369.46 | 6311.99 | 61.99 |
| 1 | 8955.67 | 8463.05 | 8487.68 | 8635.47 | 277.57 | 8463.05 | 8536.95 | 8832.51 | 8610.84 | 195.50 |
| 2 | 16935.96 | 36613.30 | 16862.07 | 23470.44 | 11382.11 | 14793.10 | 39384.24 | 15162.56 | 23113.30 | 14092.25 |
| 4 | 16724.14 | 18817.73 | 14261.08 | 16600.99 | 2280.82 | 15923.65 | 16847.29 | 15431.03 | 16067.32 | 718.98 |
| 6 | 16662.56 | 17463.05 | 12844.83 | 15656.81 | 2467.92 | 13953.20 | 15738.92 | 12290.64 | 13994.25 | 1724.50 |
| 12 | 16662.56 | 17709.36 | 18201.97 | 17524.63 | 786.15 | 18140.39 | 17586.21 | 18879.31 | 18201.97 | 648.75 |
| 24 | 15307.88 | 15307.88 | 13645.32 | 14753.69 | 959.88 | 13152.71 | 15554.19 | 15307.88 | 14671.59 | 1321.14 |
| 30 | 15184.73 | 19926.11 | 12413.79 | 15841.54 | 3798.98 | 13460.59 | 22943.35 | 15862.07 | 17422.00 | 4930.08 |
| 48 | 14753.69 | 16847.29 | 12598.52 | 14733.17 | 2124.46 | 16477.83 | 17586.21 | 17155.17 | 17073.07 | 558.73 |
| 72 | 14892.12 | 16293.10 | 12536.95 | 14507.39 | 1884.88 | 16354.68 | 16539.41 | 16847.29 | 16580.46 | 248.86 |

TABLE 11H Solubility of IMC/SLS physical mixtures in phosphate buffer pH 7.4

| Time (hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | |
|--------------|--|---------|---------|---------|--------|----------|---------|---------|---------|--------|
| | IS13(PM) | | | | | IS20(PM) | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 1645.32 | 1399.01 | 1522.17 | 1522.17 | 123.15 | 1435.96 | 1448.28 | 1571.43 | 1485.22 | 74.91 |
| 1 | 1953.20 | 1768.47 | 2014.78 | 1912.15 | 128.18 | 2076.35 | 1645.32 | 2076.35 | 1932.68 | 248.86 |
| 2 | 3862.07 | 2729.06 | 3738.92 | 3443.35 | 621.65 | 3763.55 | 3209.36 | 4145.32 | 3706.08 | 470.62 |
| 4 | 3985.22 | 3184.73 | 3862.07 | 3677.34 | 431.03 | 4046.80 | 3307.88 | 4169.95 | 3841.54 | 466.25 |
| 6 | 4157.64 | 4071.43 | 4330.05 | 4186.37 | 131.68 | 4145.32 | 3332.51 | 4330.05 | 3935.96 | 530.70 |
| 12 | 4440.89 | 3874.38 | 4268.47 | 4194.58 | 290.39 | 4169.95 | 4046.80 | 4169.95 | 4128.90 | 71.10 |
| 24 | 4256.16 | 3948.28 | 4687.19 | 4297.21 | 371.16 | 4600.99 | 4022.17 | 4871.92 | 4498.36 | 434.07 |
| 30 | 4145.32 | 4145.32 | 4256.16 | 4182.27 | 63.99 | 4588.67 | 4182.27 | 4798.03 | 4522.99 | 313.09 |
| 48 | 4231.53 | 3751.23 | 3160.10 | 3714.29 | 536.67 | 3788.18 | 4096.06 | 4379.31 | 4087.85 | 295.65 |
| 72 | 3566.50 | 3751.23 | 3997.54 | 3771.76 | 216.25 | 4403.94 | 4293.10 | 4243.84 | 4313.63 | 82.00 |

TABLE 12H Solubility of IMC/SLS physical mixtures in phosphate buffer pH 7.4

| Time (hours) | Concentration of Indomethacin ($\times 10^{-3}$ mcg/ml) | | | | | | | | | |
|--------------|--|---------|---------|---------|---------|----------|---------|---------|---------|--------|
| | IS27(PM) | | | | | IS33(PM) | | | | |
| | 1 | 2 | 3 | average | SD | 1 | 2 | 3 | average | SD |
| 0.5 | 1620.69 | 1583.74 | 1768.47 | 1657.64 | 97.75 | 1460.59 | 1423.65 | 1583.74 | 1489.33 | 83.83 |
| 1 | 2815.27 | 3061.58 | 2568.97 | 2815.27 | 246.31 | 2827.59 | 2815.27 | 2839.90 | 2827.59 | 12.32 |
| 2 | 5623.15 | 6004.93 | 5438.42 | 5688.83 | 288.91 | 5549.26 | 5426.11 | 5512.32 | 5495.89 | 63.20 |
| 4 | 5647.78 | 6263.55 | 5093.60 | 5668.31 | 585.25 | 5647.78 | 5032.02 | 5524.63 | 5401.48 | 325.83 |
| 6 | 5783.25 | 6485.22 | 4440.89 | 5569.79 | 1038.75 | 5857.14 | 5192.12 | 5746.31 | 5598.52 | 356.29 |
| 12 | 5007.39 | 6509.85 | 5253.69 | 5590.31 | 805.81 | 5610.84 | 6226.60 | 5389.16 | 5742.20 | 433.90 |
| 24 | 4625.62 | 5413.79 | 5770.94 | 5270.11 | 586.02 | 6017.24 | 6325.12 | 6325.12 | 6222.50 | 177.76 |
| 30 | 5684.73 | 5746.31 | 6078.82 | 5836.62 | 212.00 | 6399.01 | 6189.66 | 5770.94 | 6119.87 | 319.80 |
| 48 | 5906.40 | 5783.25 | 5955.67 | 5881.77 | 88.81 | 5857.14 | 6177.34 | 5869.46 | 5967.98 | 181.42 |
| 72 | 5943.35 | 5118.23 | 5684.73 | 5582.10 | 422.03 | 5783.25 | 4970.44 | 5561.58 | 5438.42 | 420.17 |

APPENDIX I
DISSOLUTION DATA

Table 1I Dissolution data of IMC

| Time (min) | % release | | | Average | SD | % CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 45.52 | 47.04 | 49.72 | 47.43 | 2.13 | 4.48 |
| 8 | 52.18 | 54.04 | 53.54 | 53.25 | 0.96 | 1.81 |
| 10 | 54.48 | 58.76 | 56.31 | 56.52 | 2.15 | 3.80 |
| 12 | 60.68 | 59.66 | 60.77 | 60.37 | 0.62 | 1.02 |
| 15 | 62.15 | 64.12 | 63.05 | 63.11 | 0.99 | 1.56 |
| 20 | 67.51 | 66.70 | 68.91 | 67.71 | 1.12 | 1.65 |
| 30 | 70.28 | 71.98 | 73.01 | 71.76 | 1.38 | 1.92 |
| 40 | 74.48 | 74.77 | 75.86 | 75.04 | 0.73 | 0.97 |
| 60 | 79.57 | 78.33 | 80.19 | 79.36 | 0.95 | 1.19 |

Table 2I Dissolution data of II10B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 49.12 | 68.24 | 42.76 | 53.37 | 13.26 | 24.85 |
| 8 | 62.21 | 75.03 | 65.23 | 67.49 | 6.70 | 9.93 |
| 10 | 82.36 | 89.54 | 85.81 | 85.90 | 3.59 | 4.18 |
| 12 | 88.55 | 93.87 | 87.70 | 90.04 | 3.34 | 3.71 |
| 15 | 95.14 | 95.72 | 97.78 | 96.21 | 1.39 | 1.44 |
| 20 | 95.24 | 97.90 | 99.19 | 97.44 | 2.01 | 2.07 |
| 30 | 96.12 | 97.69 | 101.09 | 98.30 | 2.54 | 2.58 |
| 40 | 96.52 | 97.10 | 99.38 | 97.67 | 1.51 | 1.55 |
| 60 | 96.59 | 96.69 | 99.43 | 97.57 | 1.61 | 1.65 |

Table 3I Dissolution data of II10B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 79.92 | 68.12 | 70.32 | 72.79 | 6.27 | 8.62 |
| 8 | 96.79 | 93.99 | 94.73 | 95.17 | 1.45 | 1.52 |
| 10 | 101.58 | 101.67 | 101.06 | 101.44 | 0.33 | 0.33 |
| 12 | 103.59 | 103.05 | 103.11 | 103.25 | 0.29 | 0.28 |
| 15 | 103.04 | 103.27 | 103.33 | 103.21 | 0.15 | 0.15 |
| 20 | 103.50 | 103.90 | 103.52 | 103.64 | 0.22 | 0.22 |
| 30 | 102.64 | 104.38 | 103.87 | 103.63 | 0.89 | 0.86 |
| 40 | 104.59 | 104.24 | 104.47 | 104.43 | 0.18 | 0.17 |
| 60 | 104.82 | 104.35 | 105.37 | 104.85 | 0.51 | 0.49 |

Table 4I Dissolution data of II10B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 55.08 | 69.96 | 63.04 | 62.69 | 7.45 | 11.88 |
| 8 | 70.97 | 91.77 | 97.72 | 86.82 | 14.04 | 16.17 |
| 10 | 80.75 | 101.90 | 103.52 | 95.39 | 12.70 | 13.32 |
| 12 | 92.77 | 105.91 | 104.04 | 100.91 | 7.11 | 7.05 |
| 15 | 101.41 | 107.75 | 105.68 | 104.95 | 3.24 | 3.08 |
| 20 | 107.91 | 108.78 | 106.92 | 107.87 | 0.93 | 0.86 |
| 30 | 108.45 | 108.71 | 106.11 | 107.76 | 1.43 | 1.33 |
| 40 | 108.86 | 108.92 | 105.87 | 107.88 | 1.74 | 1.62 |
| 60 | 108.96 | 107.25 | 105.81 | 107.34 | 1.58 | 1.47 |

Table 5I Dissolution data of II15B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 47.52 | 41.08 | 40.08 | 42.89 | 4.04 | 9.41 |
| 8 | 71.27 | 70.11 | 59.76 | 67.05 | 6.34 | 9.45 |
| 10 | 96.34 | 94.44 | 81.77 | 90.85 | 7.92 | 8.72 |
| 12 | 105.72 | 103.95 | 97.49 | 102.39 | 4.33 | 4.23 |
| 15 | 106.26 | 104.74 | 104.50 | 105.17 | 0.95 | 0.91 |
| 20 | 106.73 | 105.74 | 105.36 | 105.94 | 0.71 | 0.67 |
| 30 | 106.83 | 106.28 | 105.71 | 106.27 | 0.56 | 0.53 |
| 40 | 106.96 | 106.34 | 105.84 | 106.38 | 0.56 | 0.53 |
| 60 | 106.94 | 106.81 | 105.91 | 106.55 | 0.56 | 0.53 |

Table 6I Dissolution data of II15B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 46.40 | 32.04 | 37.68 | 38.71 | 7.23 | 18.69 |
| 8 | 81.94 | 65.43 | 55.71 | 67.69 | 13.26 | 19.59 |
| 10 | 104.34 | 98.05 | 82.20 | 94.86 | 11.41 | 12.03 |
| 12 | 105.38 | 102.38 | 100.15 | 102.64 | 2.62 | 2.56 |
| 15 | 106.08 | 103.99 | 102.28 | 104.12 | 1.90 | 1.83 |
| 20 | 106.36 | 104.05 | 103.49 | 104.63 | 1.52 | 1.45 |
| 30 | 106.09 | 104.73 | 104.54 | 105.12 | 0.85 | 0.80 |
| 40 | 106.81 | 104.34 | 105.21 | 105.45 | 1.25 | 1.19 |
| 60 | 106.04 | 104.63 | 105.27 | 105.31 | 0.71 | 0.67 |

Table 7I Dissolution data of II15B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 45.39 | 31.01 | 35.55 | 37.32 | 7.35 | 19.70 |
| 8 | 79.84 | 64.33 | 53.21 | 65.79 | 13.38 | 20.33 |
| 10 | 100.34 | 97.02 | 80.15 | 92.50 | 10.83 | 11.70 |
| 12 | 101.38 | 101.15 | 96.15 | 99.56 | 2.96 | 2.97 |
| 15 | 102.40 | 102.98 | 98.28 | 101.22 | 2.56 | 2.53 |
| 20 | 103.31 | 103.05 | 102.49 | 102.95 | 0.42 | 0.41 |
| 30 | 104.09 | 103.45 | 103.04 | 103.53 | 0.53 | 0.51 |
| 40 | 104.71 | 104.23 | 103.11 | 104.02 | 0.82 | 0.79 |
| 60 | 105.04 | 105.15 | 103.17 | 104.45 | 1.11 | 1.07 |

Table 8I Dissolution data of II20B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 42.32 | 32.04 | 69.12 | 47.83 | 19.14 | 40.03 |
| 8 | 71.48 | 50.47 | 88.76 | 70.24 | 19.18 | 27.30 |
| 10 | 92.99 | 85.69 | 101.87 | 93.52 | 8.10 | 8.66 |
| 12 | 103.25 | 98.77 | 103.67 | 101.90 | 2.72 | 2.67 |
| 15 | 103.67 | 104.40 | 104.03 | 104.03 | 0.37 | 0.35 |
| 20 | 104.58 | 104.54 | 105.01 | 104.71 | 0.26 | 0.25 |
| 30 | 105.03 | 104.63 | 104.76 | 104.81 | 0.20 | 0.19 |
| 40 | 105.06 | 105.04 | 105.09 | 105.06 | 0.03 | 0.02 |
| 60 | 105.08 | 105.17 | 105.15 | 105.13 | 0.05 | 0.04 |

Table 9I Dissolution data of II20B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 80.68 | 75.00 | 87.36 | 81.01 | 6.19 | 7.64 |
| 8 | 101.44 | 101.32 | 100.63 | 101.13 | 0.43 | 0.43 |
| 10 | 105.21 | 105.86 | 104.70 | 105.26 | 0.58 | 0.55 |
| 12 | 106.78 | 106.40 | 106.73 | 106.64 | 0.21 | 0.20 |
| 15 | 108.16 | 105.09 | 107.56 | 106.93 | 1.63 | 1.52 |
| 20 | 107.05 | 107.06 | 106.15 | 106.75 | 0.52 | 0.49 |
| 30 | 106.87 | 105.56 | 105.76 | 106.06 | 0.71 | 0.67 |
| 40 | 106.07 | 105.35 | 105.83 | 105.75 | 0.37 | 0.35 |
| 60 | 106.36 | 107.15 | 105.40 | 106.31 | 0.88 | 0.82 |

Table 10I Dissolution data of II20B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 55.12 | 64.72 | 87.56 | 69.13 | 16.66 | 24.10 |
| 8 | 87.09 | 83.10 | 91.49 | 87.23 | 4.20 | 4.81 |
| 10 | 100.97 | 100.21 | 100.97 | 100.72 | 0.44 | 0.44 |
| 12 | 101.81 | 101.01 | 103.32 | 102.05 | 1.17 | 1.15 |
| 15 | 105.08 | 105.48 | 103.66 | 104.74 | 0.96 | 0.92 |
| 20 | 105.63 | 105.99 | 103.49 | 105.04 | 1.35 | 1.29 |
| 30 | 104.98 | 106.15 | 104.28 | 105.14 | 0.94 | 0.90 |
| 40 | 104.94 | 106.09 | 105.23 | 105.42 | 0.60 | 0.57 |
| 60 | 104.89 | 106.30 | 105.27 | 105.49 | 0.73 | 0.69 |

Table 11I Dissolution data of I10B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 43.96 | 36.92 | 49.08 | 43.32 | 6.11 | 14.09 |
| 8 | 72.27 | 70.53 | 77.71 | 73.50 | 3.74 | 5.09 |
| 10 | 93.66 | 92.67 | 94.70 | 93.68 | 1.02 | 1.08 |
| 12 | 101.33 | 98.19 | 95.22 | 98.25 | 3.06 | 3.11 |
| 15 | 103.84 | 101.15 | 99.40 | 101.46 | 2.24 | 2.21 |
| 20 | 102.97 | 101.92 | 102.37 | 102.42 | 0.53 | 0.52 |
| 30 | 103.40 | 102.11 | 103.36 | 102.96 | 0.73 | 0.71 |
| 40 | 101.56 | 102.77 | 103.81 | 102.71 | 1.12 | 1.09 |
| 60 | 105.93 | 104.43 | 104.01 | 104.79 | 1.01 | 0.96 |

Table 12I Dissolution data of I10B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 40.16 | 39.80 | 44.24 | 41.40 | 2.47 | 5.96 |
| 8 | 78.74 | 76.65 | 75.63 | 77.01 | 1.59 | 2.06 |
| 10 | 104.24 | 101.20 | 100.11 | 101.85 | 2.14 | 2.10 |
| 12 | 105.29 | 103.41 | 102.18 | 103.63 | 1.57 | 1.51 |
| 15 | 106.26 | 104.36 | 103.17 | 104.60 | 1.56 | 1.49 |
| 20 | 106.46 | 105.28 | 103.73 | 105.16 | 1.37 | 1.30 |
| 30 | 106.53 | 105.42 | 104.56 | 105.50 | 0.99 | 0.94 |
| 40 | 106.30 | 105.50 | 104.42 | 105.41 | 0.94 | 0.89 |
| 60 | 106.92 | 106.13 | 105.09 | 106.05 | 0.92 | 0.87 |

Table 13I Dissolution data of I10B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 33.80 | 39.80 | 44.24 | 39.28 | 5.24 | 13.34 |
| 8 | 88.65 | 86.65 | 85.63 | 86.98 | 1.54 | 1.77 |
| 10 | 100.16 | 101.20 | 101.89 | 101.08 | 0.87 | 0.86 |
| 12 | 103.21 | 103.41 | 102.14 | 102.92 | 0.68 | 0.66 |
| 15 | 104.18 | 104.36 | 102.17 | 103.57 | 1.22 | 1.17 |
| 20 | 104.38 | 105.28 | 102.73 | 104.13 | 1.29 | 1.24 |
| 30 | 105.45 | 105.42 | 103.56 | 104.81 | 1.08 | 1.03 |
| 40 | 106.21 | 105.50 | 104.42 | 105.38 | 0.90 | 0.86 |
| 60 | 106.83 | 106.13 | 105.09 | 106.02 | 0.88 | 0.83 |

Table 14I Dissolution data of I15B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 70.92 | 84.00 | 67.96 | 74.29 | 8.54 | 11.49 |
| 8 | 85.87 | 99.68 | 92.67 | 92.74 | 6.91 | 7.45 |
| 10 | 92.60 | 101.53 | 98.66 | 97.60 | 4.56 | 4.67 |
| 12 | 99.84 | 102.59 | 104.72 | 102.38 | 2.44 | 2.39 |
| 15 | 101.13 | 103.11 | 103.42 | 102.55 | 1.24 | 1.21 |
| 20 | 102.94 | 101.49 | 105.57 | 103.33 | 2.07 | 2.00 |
| 30 | 102.71 | 102.43 | 105.70 | 103.62 | 1.81 | 1.75 |
| 40 | 104.35 | 102.26 | 105.01 | 103.87 | 1.44 | 1.38 |
| 60 | 103.43 | 102.86 | 107.45 | 104.58 | 2.50 | 2.39 |

Table 15I Dissolution data of I15B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 65.72 | 60.92 | 68.72 | 65.12 | 3.93 | 6.04 |
| 8 | 85.32 | 73.93 | 85.31 | 81.52 | 6.57 | 8.06 |
| 10 | 97.52 | 93.19 | 93.27 | 94.66 | 2.48 | 2.62 |
| 12 | 99.09 | 103.26 | 97.55 | 99.97 | 2.95 | 2.96 |
| 15 | 100.19 | 104.07 | 100.33 | 101.53 | 2.20 | 2.17 |
| 20 | 101.59 | 104.12 | 100.21 | 101.97 | 1.98 | 1.94 |
| 30 | 101.64 | 104.18 | 100.60 | 102.14 | 1.84 | 1.80 |
| 40 | 102.36 | 105.10 | 99.61 | 102.36 | 2.75 | 2.68 |
| 60 | 102.41 | 105.46 | 99.27 | 102.38 | 3.10 | 3.02 |

Table 16I Dissolution data of I15B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 90.40 | 65.44 | 87.08 | 80.97 | 13.55 | 16.74 |
| 8 | 100.25 | 81.95 | 98.55 | 93.58 | 10.11 | 10.80 |
| 10 | 101.04 | 95.15 | 101.44 | 99.21 | 3.52 | 3.55 |
| 12 | 101.63 | 97.76 | 102.55 | 100.64 | 2.54 | 2.53 |
| 15 | 101.25 | 100.54 | 101.01 | 100.93 | 0.36 | 0.36 |
| 20 | 100.33 | 99.26 | 104.50 | 101.36 | 2.77 | 2.73 |
| 30 | 102.42 | 101.35 | 103.01 | 102.26 | 0.84 | 0.83 |
| 40 | 101.80 | 100.28 | 100.62 | 100.90 | 0.80 | 0.79 |
| 60 | 104.68 | 101.67 | 102.47 | 102.94 | 1.56 | 1.51 |

Table 17I Dissolution data of I20B130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 70.24 | 58.36 | 51.40 | 60.00 | 9.53 | 15.88 |
| 8 | 88.18 | 72.62 | 75.21 | 78.67 | 8.34 | 10.60 |
| 10 | 98.86 | 87.37 | 83.72 | 89.98 | 7.90 | 8.78 |
| 12 | 99.35 | 92.74 | 92.62 | 94.90 | 3.85 | 4.06 |
| 15 | 100.95 | 96.46 | 100.01 | 99.14 | 2.37 | 2.39 |
| 20 | 101.79 | 98.33 | 100.12 | 100.08 | 1.73 | 1.73 |
| 30 | 100.55 | 99.58 | 100.54 | 100.22 | 0.56 | 0.56 |
| 40 | 100.40 | 99.78 | 100.19 | 100.12 | 0.31 | 0.31 |
| 60 | 101.46 | 99.73 | 100.14 | 100.44 | 0.90 | 0.90 |

Table 18I Dissolution data of I20B140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 35.08 | 30.88 | 31.64 | 32.53 | 2.24 | 6.88 |
| 8 | 47.23 | 47.77 | 49.26 | 48.09 | 1.05 | 2.19 |
| 10 | 79.93 | 78.82 | 65.43 | 74.73 | 8.07 | 10.80 |
| 12 | 93.80 | 94.15 | 82.69 | 90.21 | 6.51 | 7.22 |
| 15 | 103.11 | 96.54 | 93.69 | 97.78 | 4.83 | 4.94 |
| 20 | 103.91 | 97.78 | 94.35 | 98.68 | 4.84 | 4.91 |
| 30 | 103.66 | 96.86 | 93.92 | 98.15 | 5.00 | 5.09 |
| 40 | 104.63 | 96.92 | 94.36 | 98.64 | 5.35 | 5.42 |
| 60 | 104.20 | 96.92 | 94.62 | 98.58 | 5.00 | 5.07 |

Table 19I Dissolution data of I20B150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 39.88 | 30.80 | 64.28 | 44.99 | 17.31 | 38.49 |
| 8 | 66.33 | 72.29 | 81.44 | 73.35 | 7.61 | 10.37 |
| 10 | 83.61 | 96.89 | 96.00 | 92.16 | 7.42 | 8.05 |
| 12 | 97.95 | 102.84 | 103.52 | 101.44 | 3.04 | 2.99 |
| 15 | 98.72 | 103.34 | 104.55 | 102.20 | 3.07 | 3.01 |
| 20 | 103.39 | 103.90 | 105.04 | 104.11 | 0.84 | 0.81 |
| 30 | 105.03 | 104.26 | 105.90 | 105.06 | 0.82 | 0.78 |
| 40 | 105.34 | 104.77 | 105.90 | 105.34 | 0.57 | 0.54 |
| 60 | 105.49 | 105.10 | 106.73 | 105.77 | 0.85 | 0.80 |

Table 20I Dissolution data of I10BB130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 43.64 | 54.92 | 60.36 | 52.97 | 8.53 | 16.10 |
| 8 | 80.62 | 83.41 | 92.77 | 85.60 | 6.37 | 7.44 |
| 10 | 104.49 | 95.11 | 98.85 | 99.48 | 4.72 | 4.75 |
| 12 | 105.66 | 98.71 | 99.31 | 101.23 | 3.85 | 3.80 |
| 15 | 107.83 | 100.81 | 98.47 | 102.37 | 4.87 | 4.76 |
| 20 | 109.41 | 101.33 | 99.14 | 103.29 | 5.41 | 5.24 |
| 30 | 106.51 | 99.33 | 100.73 | 102.19 | 3.81 | 3.73 |
| 40 | 106.43 | 100.24 | 99.81 | 102.16 | 3.71 | 3.63 |
| 60 | 106.10 | 100.26 | 100.25 | 102.20 | 3.37 | 3.30 |

Table 21I Dissolution data of I10BB140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 97.52 | 95.04 | 90.80 | 94.45 | 3.40 | 3.60 |
| 8 | 100.08 | 101.92 | 99.14 | 100.38 | 1.41 | 1.41 |
| 10 | 100.39 | 104.15 | 100.75 | 101.76 | 2.07 | 2.04 |
| 12 | 101.30 | 104.99 | 101.55 | 102.61 | 2.06 | 2.01 |
| 15 | 101.55 | 106.12 | 101.52 | 103.06 | 2.65 | 2.57 |
| 20 | 100.66 | 106.35 | 101.24 | 102.75 | 3.13 | 3.05 |
| 30 | 100.12 | 105.58 | 100.66 | 102.12 | 3.01 | 2.95 |
| 40 | 99.39 | 105.84 | 101.56 | 102.27 | 3.28 | 3.21 |
| 60 | 99.92 | 105.53 | 101.32 | 102.26 | 2.92 | 2.86 |

Table 22I Dissolution data of I10BB150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|-------|---------|-------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 69.48 | 58.32 | 47.76 | 58.52 | 10.86 | 18.56 |
| 8 | 90.45 | 85.82 | 87.86 | 88.04 | 2.32 | 2.63 |
| 10 | 98.96 | 99.51 | 94.00 | 97.49 | 3.04 | 3.11 |
| 12 | 101.41 | 105.13 | 94.50 | 100.35 | 5.40 | 5.38 |
| 15 | 101.56 | 106.13 | 94.91 | 100.87 | 5.64 | 5.59 |
| 20 | 102.37 | 105.77 | 96.11 | 101.41 | 4.90 | 4.83 |
| 30 | 102.49 | 106.06 | 96.65 | 101.73 | 4.75 | 4.67 |
| 40 | 102.56 | 105.65 | 95.52 | 101.25 | 5.19 | 5.13 |
| 60 | 101.18 | 105.07 | 95.18 | 100.48 | 4.98 | 4.96 |

Table 23I Dissolution data of I15BB130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 52.32 | 64.04 | 71.04 | 62.47 | 9.46 | 15.14 |
| 8 | 82.90 | 93.85 | 101.06 | 92.61 | 9.15 | 9.88 |
| 10 | 90.55 | 101.65 | 102.91 | 98.37 | 6.80 | 6.91 |
| 12 | 100.14 | 102.62 | 102.98 | 101.91 | 1.55 | 1.52 |
| 15 | 102.54 | 102.58 | 103.81 | 102.98 | 0.72 | 0.70 |
| 20 | 101.85 | 102.17 | 102.68 | 102.23 | 0.42 | 0.41 |
| 30 | 101.65 | 103.25 | 103.02 | 102.64 | 0.87 | 0.84 |
| 40 | 101.63 | 101.45 | 102.45 | 101.84 | 0.53 | 0.52 |
| 60 | 101.39 | 103.05 | 104.25 | 102.90 | 1.43 | 1.39 |

Table 24I Dissolution data of I15BB140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 25.42 | 19.84 | 25.60 | 23.62 | 3.27 | 13.86 |
| 8 | 32.20 | 38.22 | 46.45 | 38.96 | 7.15 | 18.36 |
| 10 | 80.73 | 90.16 | 93.15 | 88.01 | 6.48 | 7.36 |
| 12 | 94.06 | 92.80 | 94.83 | 93.89 | 1.02 | 1.09 |
| 15 | 94.81 | 93.95 | 95.89 | 94.89 | 0.97 | 1.03 |
| 20 | 95.20 | 93.65 | 96.51 | 95.12 | 1.43 | 1.51 |
| 30 | 94.78 | 93.97 | 96.80 | 95.19 | 1.46 | 1.53 |
| 40 | 95.98 | 94.23 | 95.54 | 95.25 | 0.91 | 0.96 |
| 60 | 95.18 | 94.31 | 98.05 | 95.85 | 1.96 | 2.04 |

Table 25I Dissolution data of I15BB150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 51.52 | 53.48 | 51.00 | 52.00 | 1.31 | 2.52 |
| 8 | 85.05 | 85.49 | 86.67 | 85.74 | 0.84 | 0.98 |
| 10 | 90.91 | 90.93 | 90.85 | 90.90 | 0.04 | 0.05 |
| 12 | 99.65 | 99.83 | 100.75 | 100.08 | 0.59 | 0.59 |
| 15 | 100.32 | 98.71 | 99.69 | 99.57 | 0.81 | 0.81 |
| 20 | 100.36 | 100.03 | 100.40 | 100.26 | 0.20 | 0.20 |
| 30 | 103.10 | 100.50 | 102.70 | 102.10 | 1.40 | 1.37 |
| 40 | 102.88 | 103.09 | 102.35 | 102.77 | 0.38 | 0.37 |
| 60 | 102.24 | 103.41 | 103.58 | 103.08 | 0.73 | 0.71 |

Table 26I Dissolution data of I20BB130

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 53.64 | 50.04 | 51.84 | 51.84 | 1.80 | 3.47 |
| 8 | 95.92 | 93.39 | 92.54 | 93.95 | 1.76 | 1.87 |
| 10 | 102.34 | 103.02 | 104.53 | 103.30 | 1.12 | 1.08 |
| 12 | 103.68 | 105.01 | 108.19 | 105.63 | 2.32 | 2.19 |
| 15 | 103.78 | 103.66 | 104.67 | 104.04 | 0.55 | 0.53 |
| 20 | 92.50 | 104.30 | 102.01 | 99.61 | 6.26 | 6.28 |
| 30 | 94.90 | 103.09 | 103.76 | 100.58 | 4.94 | 4.91 |
| 40 | 93.79 | 107.09 | 108.08 | 102.99 | 7.98 | 7.75 |
| 60 | 105.49 | 109.17 | 109.63 | 108.10 | 2.27 | 2.10 |

Table 27I Dissolution data of I20BB140

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 52.48 | 57.68 | 62.20 | 57.45 | 4.86 | 8.47 |
| 8 | 77.94 | 80.86 | 86.72 | 81.84 | 4.47 | 5.46 |
| 10 | 88.85 | 91.07 | 93.28 | 91.07 | 2.22 | 2.43 |
| 12 | 95.14 | 99.63 | 100.46 | 98.41 | 2.86 | 2.91 |
| 15 | 100.69 | 103.68 | 106.00 | 103.46 | 2.66 | 2.57 |
| 20 | 101.37 | 102.00 | 107.13 | 103.50 | 3.16 | 3.05 |
| 30 | 102.45 | 100.83 | 106.27 | 103.18 | 2.79 | 2.71 |
| 40 | 100.64 | 101.71 | 107.57 | 103.31 | 3.73 | 3.61 |
| 60 | 101.48 | 101.67 | 106.44 | 103.19 | 2.81 | 2.73 |

Table 28I Dissolution data of I20BB150

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 86.32 | 88.72 | 85.40 | 86.81 | 1.71 | 1.97 |
| 8 | 98.15 | 98.74 | 97.36 | 98.09 | 0.69 | 0.70 |
| 10 | 99.04 | 99.44 | 98.43 | 98.97 | 0.51 | 0.52 |
| 12 | 100.29 | 100.18 | 99.49 | 99.99 | 0.43 | 0.43 |
| 15 | 99.59 | 100.50 | 99.13 | 99.74 | 0.70 | 0.70 |
| 20 | 100.73 | 100.61 | 98.75 | 100.03 | 1.11 | 1.11 |
| 30 | 99.70 | 99.95 | 100.78 | 100.14 | 0.56 | 0.56 |
| 40 | 99.73 | 100.22 | 99.61 | 99.85 | 0.32 | 0.32 |
| 60 | 99.70 | 99.92 | 99.59 | 99.74 | 0.17 | 0.17 |

Table 29I Dissolution data of IIB(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 59.87 | 59.51 | 57.48 | 58.95 | 1.29 | 2.19 |
| 8 | 60.25 | 62.00 | 65.54 | 62.60 | 2.69 | 4.30 |
| 10 | 61.42 | 65.16 | 68.97 | 65.18 | 3.78 | 5.79 |
| 12 | 62.20 | 69.60 | 70.89 | 67.56 | 4.69 | 6.94 |
| 15 | 67.47 | 67.46 | 66.68 | 67.20 | 0.45 | 0.67 |
| 20 | 71.76 | 73.31 | 73.72 | 72.93 | 1.03 | 1.41 |
| 30 | 76.15 | 77.99 | 78.97 | 77.70 | 1.43 | 1.85 |
| 40 | 82.93 | 83.33 | 85.05 | 83.77 | 1.12 | 1.34 |
| 60 | 85.44 | 85.72 | 86.86 | 86.00 | 0.75 | 0.87 |

Table 30I Dissolution data of IB(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 53.52 | 55.99 | 57.92 | 55.81 | 2.21 | 3.95 |
| 8 | 59.42 | 60.56 | 65.43 | 61.80 | 3.19 | 5.16 |
| 10 | 66.31 | 70.85 | 67.44 | 68.20 | 2.36 | 3.47 |
| 12 | 73.10 | 75.47 | 76.64 | 75.07 | 1.80 | 2.40 |
| 15 | 83.30 | 87.34 | 79.86 | 83.50 | 3.74 | 4.48 |
| 20 | 88.24 | 89.58 | 81.12 | 86.31 | 4.55 | 5.27 |
| 30 | 90.88 | 92.67 | 87.79 | 90.45 | 2.47 | 2.73 |
| 40 | 92.96 | 94.29 | 93.92 | 93.72 | 0.69 | 0.73 |
| 60 | 95.09 | 95.91 | 95.61 | 95.54 | 0.41 | 0.43 |

Table 31I Dissolution data of IBB(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 23.04 | 25.83 | 20.44 | 23.10 | 2.70 | 11.67 |
| 8 | 48.43 | 49.57 | 43.64 | 47.21 | 3.15 | 6.66 |
| 10 | 59.72 | 55.68 | 54.04 | 56.48 | 2.92 | 5.18 |
| 12 | 71.02 | 76.70 | 75.52 | 74.41 | 3.00 | 4.03 |
| 15 | 81.12 | 82.50 | 86.03 | 83.22 | 2.53 | 3.04 |
| 20 | 85.04 | 84.05 | 89.69 | 86.26 | 3.01 | 3.49 |
| 30 | 90.03 | 92.11 | 91.13 | 91.09 | 1.04 | 1.14 |
| 40 | 92.30 | 95.16 | 93.15 | 93.54 | 1.47 | 1.57 |
| 60 | 94.96 | 98.38 | 95.99 | 96.44 | 1.75 | 1.82 |

Table 32I Dissolution data of IS13

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 53.04 | 55.37 | 50.94 | 53.12 | 2.22 | 4.17 |
| 8 | 68.43 | 69.52 | 63.64 | 67.20 | 3.13 | 4.66 |
| 10 | 79.72 | 80.98 | 75.04 | 78.58 | 3.13 | 3.98 |
| 12 | 85.02 | 82.44 | 87.52 | 84.99 | 2.54 | 2.99 |
| 15 | 93.12 | 95.46 | 93.03 | 93.87 | 1.38 | 1.47 |
| 20 | 95.04 | 96.05 | 97.69 | 96.26 | 1.34 | 1.39 |
| 30 | 96.03 | 97.14 | 98.52 | 97.23 | 1.25 | 1.28 |
| 40 | 98.32 | 99.07 | 100.13 | 99.17 | 0.91 | 0.91 |
| 60 | 98.96 | 99.31 | 100.99 | 99.75 | 1.09 | 1.09 |

Table 33I Dissolution data of IS20

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|-------|
| | 1 | 2 | 3 | | | |
| 6 | 44.52 | 47.08 | 58.44 | 50.01 | 7.41 | 14.81 |
| 8 | 65.18 | 71.59 | 77.52 | 71.43 | 6.17 | 8.64 |
| 10 | 81.85 | 88.17 | 89.00 | 86.34 | 3.91 | 4.53 |
| 12 | 90.22 | 92.29 | 93.80 | 92.10 | 1.80 | 1.95 |
| 15 | 93.52 | 93.59 | 95.77 | 94.29 | 1.28 | 1.36 |
| 20 | 95.29 | 96.52 | 96.05 | 95.95 | 0.62 | 0.65 |
| 30 | 98.96 | 98.07 | 96.98 | 98.00 | 0.99 | 1.01 |
| 40 | 99.83 | 99.65 | 100.05 | 99.84 | 0.20 | 0.20 |
| 60 | 100.55 | 101.04 | 102.22 | 101.27 | 0.86 | 0.85 |

Table 34I Dissolution data of IS27

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 53.44 | 52.60 | 56.12 | 54.05 | 1.84 | 3.40 |
| 8 | 61.82 | 62.95 | 60.28 | 61.68 | 1.34 | 2.17 |
| 10 | 84.49 | 83.73 | 84.41 | 84.21 | 0.42 | 0.50 |
| 12 | 95.43 | 94.23 | 95.01 | 94.89 | 0.61 | 0.64 |
| 15 | 96.78 | 94.93 | 96.99 | 96.23 | 1.13 | 1.18 |
| 20 | 97.80 | 95.50 | 96.98 | 96.76 | 1.17 | 1.20 |
| 30 | 98.82 | 96.52 | 97.84 | 97.73 | 1.15 | 1.18 |
| 40 | 99.80 | 98.79 | 98.86 | 99.15 | 0.56 | 0.57 |
| 60 | 101.83 | 101.11 | 101.87 | 101.60 | 0.43 | 0.42 |

Table 35I Dissolution data of IS33

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|--------|--------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 52.16 | 52.40 | 53.28 | 52.61 | 0.59 | 1.12 |
| 8 | 68.60 | 69.63 | 65.89 | 68.04 | 1.93 | 2.84 |
| 10 | 78.82 | 72.62 | 79.95 | 77.13 | 3.95 | 5.12 |
| 12 | 80.19 | 83.19 | 84.15 | 82.51 | 2.07 | 2.50 |
| 15 | 89.04 | 84.44 | 89.18 | 87.55 | 2.70 | 3.08 |
| 20 | 95.58 | 95.13 | 96.22 | 95.64 | 0.55 | 0.57 |
| 30 | 97.78 | 96.05 | 97.72 | 97.18 | 0.98 | 1.01 |
| 40 | 98.01 | 97.87 | 98.34 | 98.07 | 0.24 | 0.25 |
| 60 | 99.98 | 101.23 | 102.68 | 101.30 | 1.35 | 1.33 |

Table 36I Dissolution data of IS13(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 49.60 | 48.92 | 42.64 | 47.05 | 3.84 | 8.15 |
| 8 | 51.55 | 52.07 | 54.99 | 52.87 | 1.85 | 3.51 |
| 10 | 54.97 | 53.17 | 55.70 | 54.61 | 1.30 | 2.38 |
| 12 | 63.72 | 56.76 | 58.19 | 59.56 | 3.68 | 6.17 |
| 15 | 67.43 | 66.51 | 66.83 | 66.92 | 0.47 | 0.70 |
| 20 | 67.79 | 67.30 | 67.12 | 67.40 | 0.35 | 0.51 |
| 30 | 77.66 | 76.61 | 79.93 | 78.07 | 1.70 | 2.17 |
| 40 | 80.73 | 80.50 | 81.15 | 80.79 | 0.33 | 0.41 |
| 60 | 82.55 | 83.60 | 83.11 | 83.09 | 0.53 | 0.63 |

Table 37I Dissolution data of IS20(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 47.20 | 46.84 | 47.16 | 47.07 | 0.20 | 0.42 |
| 8 | 50.28 | 49.08 | 49.95 | 49.77 | 0.62 | 1.25 |
| 10 | 52.12 | 55.02 | 58.34 | 55.16 | 3.11 | 5.64 |
| 12 | 62.98 | 61.57 | 62.77 | 62.44 | 0.76 | 1.22 |
| 15 | 64.12 | 64.18 | 72.01 | 66.77 | 4.54 | 6.80 |
| 20 | 67.32 | 73.85 | 74.19 | 71.79 | 3.87 | 5.39 |
| 30 | 68.32 | 76.92 | 77.70 | 74.31 | 5.21 | 7.00 |
| 40 | 70.70 | 76.92 | 78.61 | 75.41 | 4.17 | 5.52 |
| 60 | 80.75 | 80.13 | 80.99 | 80.62 | 0.44 | 0.55 |

Table 38I Dissolution data of IS27(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 48.44 | 49.68 | 49.32 | 49.15 | 0.64 | 1.30 |
| 8 | 52.38 | 53.32 | 54.52 | 53.41 | 1.07 | 2.01 |
| 10 | 58.21 | 61.45 | 57.13 | 58.93 | 2.25 | 3.82 |
| 12 | 68.31 | 65.39 | 65.74 | 66.48 | 1.59 | 2.40 |
| 15 | 70.07 | 76.19 | 78.10 | 74.79 | 4.19 | 5.61 |
| 20 | 78.55 | 79.45 | 80.00 | 79.33 | 0.73 | 0.92 |
| 30 | 79.31 | 80.28 | 82.33 | 80.64 | 1.54 | 1.91 |
| 40 | 83.03 | 82.65 | 83.67 | 83.12 | 0.52 | 0.62 |
| 60 | 85.30 | 84.80 | 87.08 | 85.73 | 1.20 | 1.40 |

Table 39I Dissolution data of IS33(PM)

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 43.72 | 44.64 | 48.36 | 45.57 | 2.46 | 5.39 |
| 8 | 57.17 | 57.30 | 55.25 | 56.57 | 1.15 | 2.03 |
| 10 | 68.58 | 67.95 | 67.33 | 67.95 | 0.63 | 0.92 |
| 12 | 70.24 | 71.25 | 72.82 | 71.44 | 1.30 | 1.82 |
| 15 | 79.43 | 79.14 | 78.62 | 79.06 | 0.41 | 0.52 |
| 20 | 80.42 | 80.87 | 79.91 | 80.40 | 0.48 | 0.60 |
| 30 | 85.32 | 84.98 | 84.06 | 84.79 | 0.65 | 0.77 |
| 40 | 86.36 | 86.34 | 85.41 | 86.04 | 0.54 | 0.63 |
| 60 | 88.33 | 88.00 | 87.54 | 87.96 | 0.40 | 0.45 |

Table 40I Dissolution data of spray dried IMC

| Time (min) | % release | | | Average | SD | %CV |
|---------------|-----------|-------|-------|---------|------|------|
| | 1 | 2 | 3 | | | |
| 6 | 58.20 | 58.99 | 62.15 | 59.78 | 2.09 | 3.50 |
| 8 | 62.72 | 68.46 | 65.50 | 65.56 | 2.87 | 4.38 |
| 10 | 70.46 | 70.98 | 72.17 | 71.20 | 0.88 | 1.23 |
| 12 | 71.49 | 72.02 | 77.76 | 73.76 | 3.48 | 4.71 |
| 15 | 75.52 | 73.79 | 84.54 | 77.95 | 5.77 | 7.41 |
| 20 | 80.16 | 81.72 | 89.85 | 83.91 | 5.20 | 6.20 |
| 30 | 88.83 | 90.69 | 90.24 | 89.92 | 0.97 | 1.08 |
| 40 | 89.93 | 90.39 | 92.95 | 91.09 | 1.63 | 1.79 |
| 60 | 95.68 | 88.91 | 94.95 | 93.18 | 3.72 | 3.99 |

VITA

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