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APPENDICES

APPENDIX A

Table 60 The composition of coating dispersion with the mixture of Surelease[®] and HPMC E15LV

Formulation	Surelease [®] (%)*	HPMC E15LV (%)	Theoretical weight gain (%w/w)	Actual weight gain (%w/w)
S5	100	-	5	6.18
S7.5	100	-	7.5	7.79
S10	100	-	10	11.29
S10H5	95	5	10	10.52
S10H7.5	92.5	7.5	10	12.66
S10H10	90	10	10	12.08
S15	100	-	15	15.83
S15H5	95	5	15	16.17
S15H7.5	92.5	7.5	15	16.90
S15H10	90	10	15	15.74
S20	100	-	20	21.31
S20H5	95	5	20	22.45
S20H7.5	92.5	7.5	20	23.67
S20H10	90	10	20	23.14

*Ethylcellulose aqueous dispersion had solid content of 25.1%, 70% of which was ethylcellulose

APPENDIX B
Standard Calibration curve

Table 61 Standard calibration curve of stavudine in water

Concentration (mg/ml)	Peak area
0.009583	426145
0.02875	1327983
0.04792	2196694
0.09583	4404247
0.11500	5185400

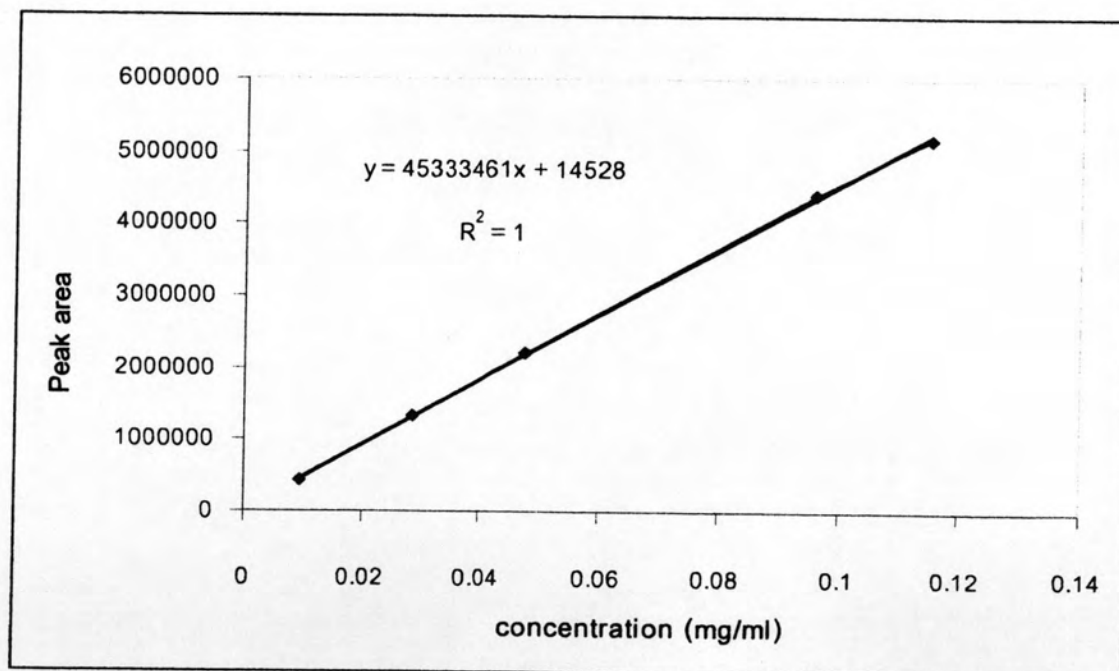


Figure 49 Standard curve of stavudine in water

Table 62 Standard calibration curve of stavudine in 0.1 N HCl

Concentration (mg/ml)	Peak area
0.01011	466143
0.03034	1392619
0.05057	2326841
0.10114	4643088
0.12136	5524713

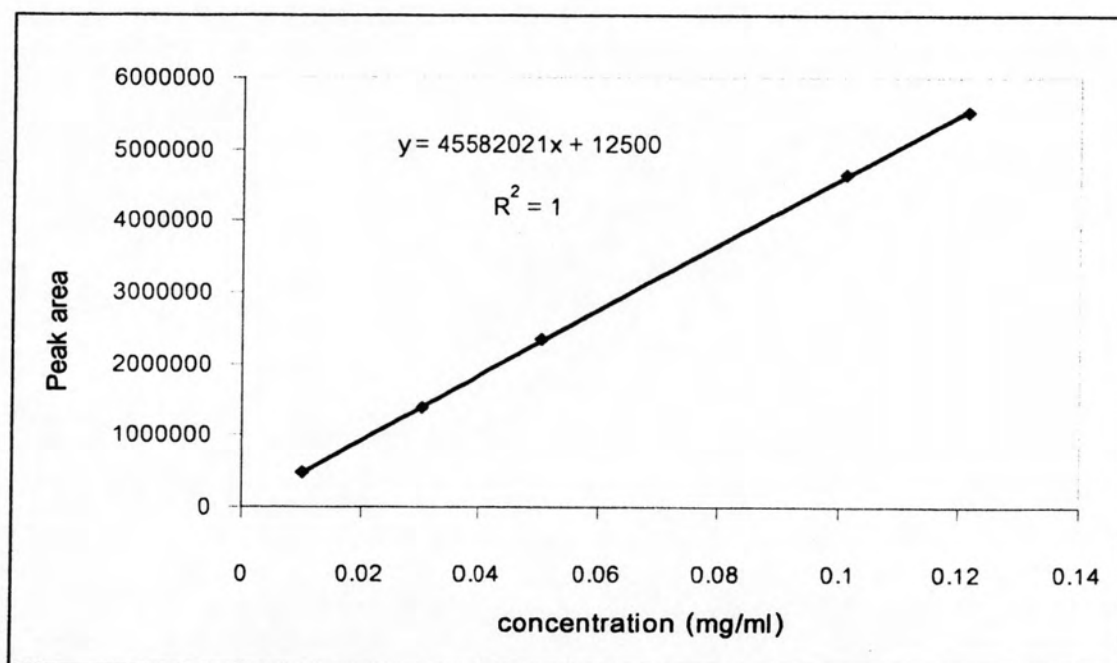
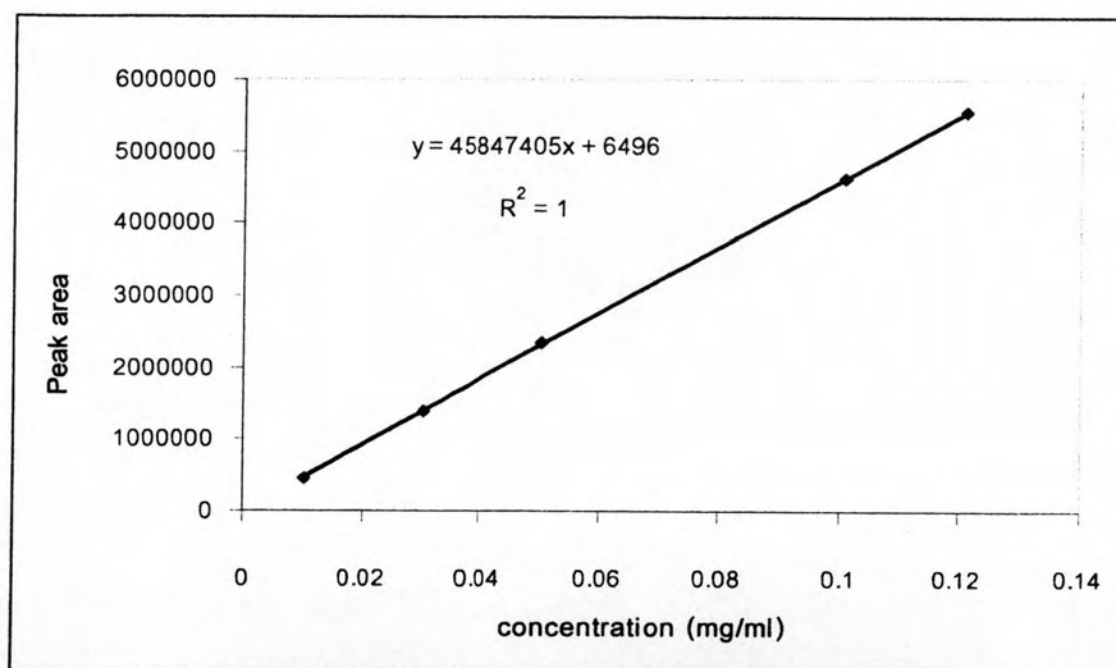


Figure 50 Standard curve of stavudine in 0.1 N HCl

Table 63 Standard calibration curve of stavudine in phosphate buffer pH 6.8

Concentration (mg/ml)	Peak area
0.01007	461658
0.03022	1387605
0.05037	2334233
0.10074	4618462
0.12089	5548808

**Figure 51** Standard curve of stavudine in phosphate buffer pH 6.8

APPENDIX C

Table 64 Dissolution data of stavudine from uncoated pellets and Zerit[®] IR

Time (hour)	%Drug released* (S.D.)					
	Water		0.1 N HCl		Phosphate buffer pH 6.8	
	Uncoated d4T pellets	Zerit [®] IR	Uncoated d4T pellets	Zerit [®] IR	Uncoated d4T pellets	Zerit [®] IR
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.25	92.67 (0.23)	94.68 (0.27)	91.36 (0.53)	93.26 (0.16)	93.45 (0.48)	95.29 (0.23)
0.5	94.50 (0.16)	97.38 (0.18)	92.63 (0.35)	95.97 (0.15)	96.79 (0.71)	98.65 (0.17)
1.0	97.53 (1.18)	98.56 (0.25)	97.55 (1.36)	98.64 (0.22)	97.36 (1.37)	98.53 (0.36)
2.0	97.40 (1.47)	98.78 (0.34)	96.41 (1.59)	97.23 (0.43)	96.04 (0.65)	97.94 (0.42)
4.0	96.59 (0.89)	97.44 (0.49)	94.88 (1.27)	95.89 (0.36)	95.47 (0.76)	96.39 (0.37)
6.0	95.74 (0.62)	95.35 (0.45)	93.67 (0.28)	94.67 (0.52)	94.79 (0.48)	95.13 (0.58)
9.0	94.56 (0.73)	93.52 (0.54)	91.15 (0.65)	92.21 (0.55)	93.91 (0.92)	93.80 (0.69)
12.0	93.28 (0.96)	92.09 (0.56)	88.88 (0.77)	90.78 (0.48)	91.89 (0.53)	92.45 (0.31)
15.0	91.94 (0.13)	91.69 (0.66)	87.46 (0.63)	89.56 (0.42)	91.07 (0.47)	91.32 (0.52)
18.0	90.72 (0.34)	90.06 (0.82)	85.97 (0.51)	87.34 (0.61)	89.38 (0.66)	90.65 (0.32)
21.0	89.92 (0.67)	89.57 (0.91)	84.16 (0.48)	86.08 (0.75)	88.15 (0.75)	89.55 (0.84)
24.0	88.18 (0.83)	88.31 (0.73)	82.48 (0.67)	84.23 (0.84)	86.54 (0.52)	87.34 (0.76)

*Results are averaged from six determinations.

Table 65 Dissolution data of stavudine in water from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)				
	S5	S7.5	S10	S15	S20
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	5.87 (3.32)	0.93 (2.23)	0.45 (3.95)	0.37 (1.51)	0.22 (1.31)
1.0	13.49 (2.80)	3.44 (2.24)	0.75 (2.46)	0.69 (1.23)	0.62 (1.43)
2.0	26.13 (3.65)	11.58 (2.26)	4.72 (2.63)	2.57 (1.84)	1.39 (1.90)
4.0	42.94 (2.97)	25.81 (2.28)	15.32 (3.62)	8.46 (2.99)	4.33 (2.82)
6.0	53.93 (3.23)	36.92 (2.30)	24.21 (3.67)	15.63 (2.87)	9.77 (2.16)
9.0	65.61 (3.00)	50.04 (2.34)	35.92 (4.41)	24.76 (2.88)	18.53 (2.75)
12.0	74.62 (4.05)	60.39 (3.36)	46.58 (4.41)	34.96 (3.90)	25.90 (2.73)
15.0	80.89 (4.73)	68.60 (3.38)	55.99 (4.99)	42.39 (3.92)	32.43 (3.21)
18.0	85.08 (4.73)	75.82 (3.37)	64.08 (4.84)	50.88 (3.94)	39.45 (3.01)
21.0	87.72 (4.43)	80.65 (4.63)	71.03 (4.86)	59.11 (3.96)	45.92 (3.45)
24.0	87.78 (4.22)	84.52 (4.18)	75.90 (4.87)	65.37 (3.98)	54.32 (3.29)
Drug remained in pellet	10.80 (5.56)	13.98 (5.41)	22.96 (5.02)	32.84 (4.57)	43.82 (4.22)

*Results are averaged from six determinations.

Table 65 (Cont.) Dissolution data of stavudine in water from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)				
	S10H5	S10H7.5	S10H10	S15H5	S15H7.5
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.18 (1.43)	1.39 (1.54)	3.59 (2.13)	0.26 (0.90)	0.50 (1.36)
1.0	0.47 (1.08)	9.00 (1.33)	17.47 (2.44)	0.41 (1.13)	1.79 (1.67)
2.0	3.95 (2.06)	21.55 (1.95)	42.67 (3.17)	2.84 (1.78)	9.03 (2.06)
4.0	17.54 (2.27)	42.38 (2.66)	70.91 (4.56)	13.11 (3.65)	25.23 (3.88)
6.0	30.37 (3.85)	56.78 (3.78)	83.80 (4.32)	22.29 (3.22)	38.28 (3.99)
9.0	45.64 (3.71)	72.66 (3.54)	90.97 (4.97)	34.37 (3.46)	54.83 (4.21)
12.0	59.89 (4.90)	81.45 (4.05)	93.43 (3.22)	45.38 (3.78)	67.48 (3.67)
15.0	70.63 (4.89)	85.90 (4.23)	94.62 (3.76)	55.74 (3.50)	76.38 (4.35)
18.0	78.53 (5.05)	88.54 (4.44)	94.40 (3.05)	65.10 (4.23)	81.82 (3.89)
21.0	83.76 (4.70)	89.65 (5.06)	93.65 (4.23)	72.44 (3.05)	85.89 (3.75)
24.0	88.14 (5.22)	90.69 (4.13)	93.92 (3.67)	79.30 (3.67)	88.27 (3.10)
Drug remained in pellet	10.74 (5.13)	9.11 (5.06)	4.96 (4.12)	18.78 (4.45)	10.96 (3.68)

*Results are averaged from six determinations.

Table 65 (Cont.) Dissolution data of stavudine in water from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)			
	S15H10	S20H5	S20H7.5	S20H10
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.83 (0.16)	0.25 (0.07)	0.30 (0.06)	0.67 (0.04)
1.0	5.73 (0.12)	0.41 (0.04)	1.10 (0.05)	3.16 (0.08)
2.0	20.43 (2.05)	1.64 (0.18)	6.32 (0.56)	12.59 (1.23)
4.0	44.43 (3.56)	11.03 (1.78)	20.34 (2.30)	32.56 (2.98)
6.0	61.80 (4.72)	19.29 (2.66)	34.50 (2.86)	49.85 (2.75)
9.0	78.36 (4.90)	30.78 (2.43)	48.38 (3.11)	71.63 (3.52)
12.0	87.17 (4.06)	40.60 (3.18)	60.42 (3.02)	81.20 (3.24)
15.0	91.68 (3.28)	49.45 (3.09)	69.54 (3.24)	88.80 (3.60)
18.0	93.60 (3.46)	57.59 (3.20)	76.38 (3.65)	92.90 (3.12)
21.0	94.33 (2.55)	68.22 (3.45)	80.89 (2.23)	97.25 (3.34)
24.0	93.84 (3.04)	77.74 (4.05)	84.85 (3.96)	95.13 (3.03)
Unreleased	4.97 (3.16)	21.09 (4.79)	14.06 (4.07)	2.72 (1.85)

*Results are averaged from six determinations.

Table 66 Dissolution data of stavudine in 0.1 N HCl from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)				
	S10H5	S10H7.5	S10H10	S15H5	S15H7.5
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.05 (0.02)	0.56 (0.04)	0.72 (0.05)	0.37 (0.04)	0.53 (0.04)
1.0	1.60 (0.84)	4.23 (1.06)	6.36 (1.84)	0.42 (0.02)	0.51 (0.03)
1.5	5.61 (1.22)	9.69 (2.12)	13.10 (1.60)	0.60 (0.06)	1.21 (0.98)
2.0	10.20 (1.65)	15.40 (2.34)	19.05 (2.02)	1.04 (1.32)	2.50 (1.74)
3.0	18.53 (1.48)	24.96 (2.89)	30.16 (2.78)	2.95 (2.06)	6.45 (3.89)
4.0	26.01 (2.36)	33.08 (2.63)	41.25 (3.88)	5.82 (3.21)	9.76 (3.70)

*Results are averaged from six determinations.

Table 66 (Cont.) Dissolution data of stavudine in 0.1 N HCl from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)			
	S15H10	S20H5	S20H7.5	S20H10
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.75 (0.03)	0.19 (0.02)	0.13 (0.02)	0.72 (0.01)
1.0	0.81 (0.04)	0.28 (0.15)	0.25 (0.25)	1.01 (0.23)
1.5	2.86 (0.67)	0.47 (0.52)	0.63 (0.66)	2.01 (0.95)
2.0	5.34 (1.14)	0.67 (0.96)	1.19 (1.04)	2.87 (1.37)
3.0	10.25 (3.35)	1.50 (1.10)	2.89 (2.16)	5.13 (2.65)
4.0	14.65 (3.68)	3.12 (2.05)	5.26 (2.28)	8.02 (1.92)

*Results are averaged from six determinations.

Table 67 Dissolution data of stavudine in phosphate buffer pH 6.8 from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)				
	S10H5	S10H7.5	S10H10	S15H5	S15H7.5
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	10.67 (2.23)	13.81 (2.97)	24.01 (2.06)	0.45 (0.02)	0.62 (0.08)
1.0	40.11 (3.56)	44.25 (3.66)	63.35 (4.55)	1.90 (1.00)	1.71 (1.03)
2.0	72.29 (4.78)	70.13 (4.85)	85.39 (4.12)	10.73 (2.67)	10.66 (2.45)
4.0	91.83 (5.42)	87.54 (5.04)	95.51 (4.08)	30.56 (3.23)	31.69 (3.14)
6.0	95.96 (4.38)	94.22 (4.46)	96.29 (3.97)	47.03 (2.45)	49.19 (2.36)
9.0	96.71 (3.01)	96.19 (3.27)	94.75 (3.40)	64.82 (2.74)	67.46 (2.87)
12.0	95.34 (3.32)	96.32 (2.98)	93.35 (3.63)	76.62 (3.56)	79.37 (2.35)
15.0	93.83 (2.69)	94.68 (2.65)	92.53 (3.16)	83.29 (3.21)	86.52 (3.06)
18.0	91.84 (2.88)	93.19 (2.80)	90.54 (3.05)	86.92 (3.38)	89.71 (3.44)
21.0	90.68 (2.76)	92.20 (3.14)	89.40 (3.12)	88.33 (2.42)	90.48 (3.01)
24.0	89.38 (3.02)	89.53 (3.26)	89.04 (3.19)	89.00 (2.52)	90.18 (2.76)
Drug remained in pellet	8.12 (2.54)	7.07 (2.92)	9.55 (2.37)	8.76 (2.08)	8.53 (2.12)

*Results are averaged from six determinations.

Table 67 (Cont.) Dissolution data of stavudine in phosphate buffer pH 6.8 from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)			
	S15H10	S20H5	S20H7.5	S20H10
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	1.75 (1.02)	0.57 (0.22)	0.13 (0.06)	1.25 (0.08)
1.0	7.82 (2.36)	0.71 (0.31)	0.89 (0.09)	5.23 (0.11)
2.0	23.70 (2.04)	3.38 (1.15)	6.50 (1.23)	13.55 (1.67)
4.0	47.97 (3.85)	15.37 (1.98)	23.63 (1.48)	34.69 (1.80)
6.0	66.24 (4.67)	28.16 (2.07)	40.37 (2.26)	53.81 (2.49)
9.0	81.76 (4.72)	45.37 (2.34)	60.35 (2.93)	70.84 (3.73)
12.0	89.24 (3.21)	60.59 (3.86)	74.53 (2.47)	82.97 (3.54)
15.0	90.37 (2.98)	72.33 (4.52)	82.97 (3.01)	86.88 (3.12)
18.0	89.09 (2.43)	80.37 (3.37)	88.09 (3.65)	89.46 (3.33)
21.0	89.51 (3.01)	85.65 (3.14)	89.40 (3.02)	89.37 (3.00)
24.0	89.12 (2.00)	87.85 (3.58)	89.64 (2.97)	88.46 (3.22)
Drug remained in pellet	7.71 (2.33)	10.96 (3.24)	7.29 (2.05)	8.52 (3.41)

*Results are averaged from six determinations.

Table 68 Dissolution data of stavudine in pH change system from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)				
	S10H5	S10H7.5	S10H10	S15H5	S15H7.5
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.06 (0.03)	0.89 (0.05)	1.95 (0.26)	0.25 (0.06)	0.54 (0.04)
1.0	3.52 (2.11)	5.65 (1.24)	6.08 (0.65)	0.49 (0.13)	1.05 (0.08)
2.0	12.92 (2.45)	17.19 (2.89)	19.64 (2.50)	2.52 (1.28)	2.83 (1.95)
4.0	75.90 (3.94)	80.89 (4.25)	90.12 (5.69)	24.60 (2.40)	29.41 (2.61)
6.0	90.37 (4.77)	92.08 (5.33)	95.84 (4.74)	43.92 (2.86)	48.05 (2.54)
9.0	96.30 (5.06)	95.11 (4.89)	95.57 (3.22)	65.51 (3.02)	69.62 (2.82)
12.0	96.08 (4.82)	96.60 (4.17)	95.55 (3.80)	78.54 (3.74)	81.29 (3.31)
15.0	94.65 (3.62)	95.72 (4.23)	94.71 (3.87)	83.88 (3.11)	86.79 (3.09)
18.0	93.75 (4.14)	93.96 (3.60)	93.00 (2.75)	87.36 (3.82)	88.83 (3.07)
21.0	92.09 (3.88)	91.58 (3.19)	90.76 (2.43)	89.21 (3.05)	90.91 (2.99)
24.0	90.02 (3.05)	90.84 (3.03)	89.53 (2.61)	90.75 (3.06)	89.46 (2.87)
Drug remained in pellet	7.91 (1.26)	7.62 (2.85)	8.04 (2.18)	7.99 (3.53)	8.58 (2.72)

*Results are averaged from six determinations.

Table 68 (Cont.) Dissolution data of stavudine in pH change system from various formulations of coated pellets

Time (hour)	%Drug released* (S.D.)			
	S15H10	S20H5	S20H7.5	S20H10
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.88 (0.04)	0.20 (0.02)	0.26 (0.02)	0.99 (0.02)
1.0	0.90 (0.13)	0.35 (0.08)	0.47 (0.07)	1.83 (0.15)
2.0	5.09 (1.22)	1.26 (0.58)	2.03 (1.04)	4.93 (1.48)
4.0	38.07 (3.43)	11.25 (2.37)	19.17 (2.75)	26.21 (2.66)
6.0	64.10 (4.67)	24.36 (2.46)	37.24 (2.83)	50.55 (2.54)
9.0	83.63 (4.81)	43.89 (3.09)	58.49 (2.54)	73.20 (3.09)
12.0	91.48 (3.54)	60.56 (3.21)	71.97 (2.90)	84.30 (3.15)
15.0	92.13 (3.90)	73.98 (3.42)	80.65 (2.16)	87.25 (3.32)
18.0	92.40 (3.65)	82.99 (3.86)	88.43 (3.08)	89.63 (2.96)
21.0	91.10 (2.73)	87.79 (3.55)	89.72 (2.75)	90.00 (2.85)
24.0	90.54 (3.36)	88.34 (3.26)	90.44 (2.97)	88.39 (3.10)
Unreleased	8.10 (2.54)	9.75 (2.94)	7.86 (2.04)	8.78 (2.96)

*Results are averaged from six determinations.

APPENDIX D

Table 69 Dissolution data of stavudine pellets in water when products were kept at 30 °C, 65 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.32 (0.03)	0.28 (0.02)	0.41 (0.03)	0.48 (0.04)	0.35 (0.02)	0.27 (0.03)	0.19 (0.02)
1.0	0.45 (0.17)	0.40 (0.24)	0.56 (0.16)	0.63 (0.08)	0.48 (0.05)	0.54 (0.04)	1.39 (0.75)
2.0	1.48 (0.52)	2.67 (0.63)	3.66 (0.74)	3.52 (0.59)	3.20 (0.42)	4.34 (1.22)	3.58 (1.18)
4.0	10.06 (1.76)	11.15 (1.54)	10.34 (1.62)	10.89 (1.88)	10.56 (2.14)	10.75 (2.05)	9.63 (1.95)
6.0	17.45 (2.38)	19.25 (2.82)	18.04 (1.49)	18.45 (2.06)	17.47 (2.33)	17.55 (2.19)	16.93 (2.75)
9.0	29.02 (2.55)	30.68 (2.61)	29.15 (2.32)	29.86 (2.14)	28.99 (2.84)	27.72 (2.42)	27.31 (2.26)
12.0	38.98 (2.91)	41.45 (2.50)	40.78 (3.17)	41.56 (2.59)	38.66 (2.96)	38.53 (2.67)	37.08 (2.40)
15.0	49.39 (3.05)	50.64 (3.29)	51.23 (3.40)	51.45 (3.32)	48.28 (3.15)	48.94 (3.07)	46.80 (3.96)
18.0	57.63 (3.27)	60.15 (3.73)	60.48 (3.38)	61.60 (3.71)	57.26 (3.86)	58.89 (3.80)	57.63 (3.51)
21.0	67.39 (3.13)	69.52 (3.82)	68.61 (3.10)	70.09 (3.06)	67.46 (3.23)	67.38 (3.64)	66.72 (3.72)
24.0	78.02 (3.16)	79.33 (3.86)	77.68 (3.59)	80.14 (3.50)	77.39 (3.37)	75.65 (3.28)	76.87 (3.40)

*Results are averaged from six determinations.

Table 70 Dissolution data of stavudine pellets in 0.1 N HCl when products were kept at 30 °C, 65 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.23 (0.03)	0.27 (0.04)	0.18 (0.02)	0.21 (0.03)	0.15 (0.02)	0.22 (0.03)	0.31 (0.04)
1.0	0.46 (0.06)	0.43 (0.06)	0.31 (0.03)	0.35 (0.04)	0.49 (0.03)	0.47 (0.05)	0.54 (0.05)
1.5	0.78 (0.04)	0.72 (0.08)	0.67 (0.06)	0.69 (0.05)	0.69 (0.07)	0.74 (0.06)	0.82 (0.08)
2.0	1.27 (0.89)	1.22 (0.64)	1.16 (1.03)	1.17 (0.95)	1.19 (0.84)	1.18 (1.14)	1.36 (1.53)
3.0	2.21 (0.65)	2.09 (0.98)	2.12 (1.24)	2.23 (1.10)	2.15 (1.20)	2.07 (1.96)	2.29 (1.75)
4.0	3.67 (1.02)	3.45 (1.92)	3.58 (1.42)	3.72 (1.37)	3.84 (1.54)	3.55 (2.03)	3.78 (2.20)

*Results are averaged from six determinations.

Table 71 Dissolution data of stavudine pellets in phosphate buffer pH 6.8
when products were kept at 30 °C, 65 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.53 (0.06)	0.43 (0.05)	0.31 (0.04)	0.52 (0.04)	0.49 (0.04)	0.63 (0.05)	0.48 (0.05)
1.0	0.71 (0.13)	0.67 (0.24)	0.59 (0.18)	0.80 (0.32)	0.64 (0.45)	0.81 (0.33)	0.69 (0.36)
2.0	3.06 (1.25)	4.01 (1.36)	3.77 (1.59)	4.56 (1.74)	3.83 (2.06)	4.67 (2.45)	4.12 (2.55)
4.0	15.42 (2.86)	16.69 (2.79)	14.38 (2.84)	16.93 (2.90)	15.09 (2.33)	17.22 (2.79)	15.37 (3.20)
6.0	26.34 (2.97)	29.52 (2.80)	25.27 (3.30)	28.88 (3.66)	27.97 (2.75)	29.06 (3.58)	27.06 (3.74)
9.0	43.80 (3.58)	46.06 (3.44)	42.95 (3.52)	46.37 (3.21)	44.89 (3.91)	47.78 (4.30)	45.32 (4.11)
12.0	60.64 (3.40)	61.07 (4.13)	58.49 (4.06)	62.42 (4.28)	58.56 (3.85)	62.94 (4.67)	61.90 (4.03)
15.0	72.68 (4.12)	73.88 (3.89)	71.06 (4.11)	74.51 (4.05)	70.43 (4.24)	74.81 (4.23)	72.45 (3.78)
18.0	83.45 (3.95)	82.02 (3.75)	81.23 (3.05)	84.03 (4.13)	80.65 (4.06)	82.98 (4.05)	82.38 (3.60)
21.0	88.06 (3.61)	86.67 (3.76)	87.05 (3.27)	88.79 (3.89)	86.87 (3.53)	87.66 (3.94)	87.55 (3.91)
24.0	89.62 (3.53)	87.98 (3.05)	88.64 (3.80)	89.73 (3.22)	88.04 (3.49)	89.42 (3.86)	90.60 (3.85)

*Results are averaged from six determinations.

Table 72 Dissolution data of stavudine pellets in pH change system
when products were kept at 30 °C, 65 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.32 (0.03)	0.21 (0.02)	0.19 (0.03)	0.17 (0.03)	0.18 (0.05)	0.17 (0.04)	0.15 (0.03)
1.0	0.36 (0.04)	0.34 (0.03)	0.35 (0.05)	0.32 (0.06)	0.37 (0.11)	0.46 (0.09)	0.43 (0.08)
2.0	1.28 (0.52)	1.31 (0.75)	1.26 (0.68)	1.28 (0.43)	1.33 (0.56)	1.59 (0.69)	1.49 (0.72)
4.0	12.20 (1.46)	11.50 (1.52)	10.97 (2.09)	10.83 (2.38)	9.86 (2.21)	11.49 (2.80)	10.32 (2.63)
6.0	26.43 (2.38)	24.27 (2.69)	23.14 (2.53)	21.23 (2.90)	22.19 (3.14)	24.85 (3.02)	23.87 (3.45)
9.0	43.79 (2.75)	44.85 (3.40)	38.65 (3.75)	38.07 (3.52)	39.42 (3.92)	40.76 (3.45)	39.17 (3.68)
12.0	62.87 (3.90)	61.56 (4.23)	58.43 (4.01)	56.28 (4.08)	56.03 (3.78)	56.31 (4.13)	57.49 (3.61)
15.0	75.61 (3.14)	74.01 (3.25)	72.28 (4.29)	74.55 (4.00)	72.91 (4.45)	70.64 (4.22)	72.36 (3.92)
18.0	85.46 (3.67)	83.62 (3.07)	82.09 (3.99)	80.76 (3.85)	80.27 (3.50)	81.39 (3.96)	82.41 (3.54)
21.0	88.92 (3.48)	86.34 (3.81)	85.74 (3.56)	86.12 (3.94)	84.88 (3.73)	85.52 (3.85)	84.33 (3.42)
24.0	91.01 (3.02)	89.25 (3.53)	87.96 (3.75)	87.54 (3.36)	86.96 (3.89)	86.39 (3.67)	86.14 (3.13)

*Results are averaged from six determinations.

Table 73 Dissolution data of stavudine pellets in water when products were kept at 40 °C, 75 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.16 (0.03)	0.24 (0.05)	0.32 (0.05)	0.18 (0.12)	0.29 (0.18)	0.27 (0.16)	0.25 (0.16)
1.0	0.32 (0.08)	0.32 (0.07)	0.88 (0.24)	0.34 (0.08)	0.45 (0.08)	0.47 (0.12)	0.46 (0.09)
2.0	2.78 (0.45)	2.83 (0.96)	3.89 (1.18)	3.36 (1.35)	2.56 (1.20)	3.14 (1.52)	3.52 (1.46)
4.0	11.23 (1.26)	12.59 (2.83)	12.45 (2.57)	10.37 (2.16)	11.65 (2.65)	11.32 (2.98)	11.78 (2.45)
6.0	19.12 (1.89)	20.26 (2.60)	19.87 (2.35)	17.55 (2.29)	19.94 (2.58)	19.16 (2.56)	19.45 (2.74)
9.0	31.33 (2.52)	31.41 (3.06)	29.84 (2.40)	28.67 (2.83)	31.82 (3.35)	30.39 (3.10)	29.18 (2.93)
12.0	40.94 (2.78)	41.78 (2.47)	39.40 (2.65)	38.56 (2.70)	42.33 (3.01)	39.87 (3.24)	38.90 (3.09)
15.0	50.49 (3.09)	51.27 (3.19)	49.92 (2.87)	48.31 (3.06)	51.38 (3.18)	49.64 (3.76)	50.23 (3.45)
18.0	59.92 (3.15)	60.03 (3.38)	59.65 (3.24)	57.16 (3.15)	60.59 (3.44)	58.77 (3.43)	60.21 (3.28)
21.0	69.99 (3.26)	69.46 (3.41)	68.23 (3.66)	67.39 (3.28)	69.43 (3.90)	67.56 (3.21)	70.02 (3.77)
24.0	79.13 (3.87)	79.11 (3.25)	78.56 (3.32)	77.54 (3.39)	77.35 (3.67)	76.06 (3.19)	78.07 (3.80)

*Results are averaged from six determinations.

Table 74 Dissolution data of stavudine pellets in 0.1 N HCl when products were kept at 40 °C, 75 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.24 (0.03)	0.17 (0.02)	0.13 (0.02)	0.19 (0.03)	0.28 (0.04)	0.26 (0.04)	0.12 (0.02)
1.0	0.35 (0.05)	0.25 (0.06)	0.26 (0.05)	0.39 (0.12)	0.42 (0.23)	0.37 (0.08)	0.23 (0.09)
1.5	0.48 (0.14)	0.49 (0.25)	0.45 (0.18)	0.62 (0.35)	0.56 (0.15)	0.53 (0.08)	0.47 (0.12)
2.0	0.71 (0.76)	0.83 (0.39)	0.67 (0.42)	0.84 (0.67)	0.79 (0.48)	0.92 (0.06)	0.68 (0.05)
3.0	1.69 (0.82)	1.77 (0.74)	1.88 (0.31)	1.65 (0.51)	1.72 (0.62)	2.06 (0.11)	1.54 (0.24)
4.0	3.42 (1.15)	3.08 (1.56)	3.25 (1.24)	2.97 (0.89)	2.98 (1.70)	3.45 (0.96)	3.15 (0.67)

*Results are averaged from six determinations.

Table 75 Dissolution data of stavudine pellets in phosphate buffer pH 6.8 when products were kept at 40 °C, 75 %RH for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.46 (0.05)	0.54 (0.04)	0.48 (0.05)	0.39 (0.03)	0.27 (0.02)	0.35 (0.03)	0.50 (0.04)
1.0	0.63 (0.08)	0.78 (0.06)	0.72 (0.07)	0.54 (0.05)	0.40 (0.04)	0.69 (0.06)	0.83 (0.06)
2.0	2.98 (0.66)	4.02 (1.41)	3.76 (1.39)	2.69 (0.86)	3.21 (1.28)	4.12 (1.57)	4.27 (1.65)
4.0	15.11 (2.32)	16.78 (2.87)	15.64 (2.56)	14.35 (2.69)	13.87 (2.10)	16.95 (2.38)	15.95 (2.96)
6.0	27.24 (2.74)	29.99 (2.99)	28.06 (2.83)	26.76 (2.38)	27.68 (2.54)	28.57 (2.61)	27.88 (2.78)
9.0	44.67 (3.35)	46.74 (3.46)	45.83 (3.21)	44.31 (3.74)	45.50 (3.05)	44.06 (3.83)	42.96 (3.27)
12.0	61.32 (4.04)	62.35 (4.11)	61.97 (3.88)	58.85 (3.56)	61.24 (3.98)	59.98 (4.22)	58.73 (4.08)
15.0	73.18 (4.12)	74.69 (4.02)	74.91 (3.54)	70.66 (4.19)	72.87 (3.87)	71.53 (4.34)	69.92 (4.19)
18.0	82.65 (3.89)	83.37 (4.05)	84.36 (4.32)	80.05 (3.97)	81.92 (3.90)	79.98 (3.82)	80.35 (4.26)
21.0	87.43 (3.76)	88.15 (3.90)	87.99 (3.70)	85.83 (3.69)	85.55 (3.24)	84.25 (3.70)	85.66 (3.84)
24.0	88.91 (3.54)	89.05 (3.86)	90.62 (3.49)	89.39 (3.73)	88.03 (3.36)	87.44 (3.71)	88.09 (3.65)

*Results are averaged from six determinations.

Table 76 Dissolution data of stavudine pellets in pH change system when products were kept at 40 °C, 75 %RH. for 6 months

Time (hour)	%Drug released* (S.D.)						
	0 Month	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months
0.0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
0.5	0.41 (0.05)	0.34 (0.05)	0.57 (0.06)	0.39 (0.04)	0.48 (0.05)	0.46 (0.06)	0.51 (0.04)
1.0	0.43 (0.04)	0.42 (0.05)	0.63 (0.06)	0.48 (0.05)	0.52 (0.06)	0.53 (0.06)	0.65 (0.05)
2.0	2.17 (0.38)	3.24 (0.41)	2.86 (0.17)	3.04 (0.59)	1.97 (0.26)	1.88 (0.24)	2.43 (0.31)
4.0	13.58 (1.65)	12.76 (1.85)	11.23 (2.26)	9.07 (1.45)	10.58 (2.18)	11.09 (2.37)	9.93 (1.92)
6.0	27.08 (2.89)	25.59 (2.46)	23.92 (2.53)	24.79 (3.12)	21.76 (2.69)	23.48 (2.55)	20.42 (2.17)
9.0	45.23 (3.37)	46.38 (3.54)	42.85 (3.74)	45.52 (3.27)	39.93 (3.60)	41.62 (3.18)	40.84 (3.86)
12.0	61.49 (4.43)	62.95 (4.09)	60.76 (4.12)	59.87 (3.88)	57.31 (4.28)	58.24 (3.83)	56.73 (3.72)
15.0	74.31 (4.54)	75.42 (4.11)	72.08 (4.09)	71.64 (3.96)	70.45 (4.51)	71.59 (4.69)	69.82 (4.01)
18.0	82.29 (3.48)	84.67 (4.30)	81.46 (3.70)	83.22 (3.50)	77.94 (3.78)	80.30 (4.02)	80.55 (3.99)
21.0	87.87 (3.95)	88.23 (3.87)	85.99 (3.95)	86.16 (3.61)	83.47 (3.97)	84.11 (3.78)	82.48 (3.56)
24.0	90.18 (3.62)	90.51 (3.94)	88.24 (3.78)	87.29 (3.83)	85.66 (3.42)	85.34 (3.59)	84.97 (3.47)

*Results are averaged from six determinations.

APPENDIX E

1. Mean (\bar{X})

$$\bar{X} = \frac{\sum X}{n}$$

2. Standard deviation (S.D.)

$$\text{S.D.} = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$$

3. Coefficient of variation (C.V.)

$$\text{C.V.} = \frac{\text{S.D.}}{\text{Mean}}$$

4. Area under the concentration time curve (AUC_{0-t})

$$[\text{AUC}]_0^t = \sum \left\{ \frac{(t_n - t_{n-1}) (C_{n-1} + C_n)}{2} \right\}$$

5. Area under the concentration time curve ($\text{AUC}_{0-\infty}$)

$$[\text{AUC}]_0^\infty = \sum \left\{ \frac{(t_n - t_{n-1}) (C_{n-1} + C_n)}{2} \right\} + C/K$$

6. Elimination rate constant

$$K_e = \frac{\ln C_1 - \ln C_2}{t_2 - t_1}$$

7. The elimination half-life

$$t_{1/2} = 0.693 / K$$

8. Percentage relative bioavailability

$$\% \text{Relative bioavailability} = \frac{\text{AUC}_{0-\infty \text{ pellet}}}{\text{AUC}_{0-\infty \text{ Zerit IR}}} \times \frac{\text{Dose}_{\text{Zerit IR}}}{\text{Dose}_{\text{pellet}}} \times 100$$

VITA

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