



CHAPTER IV

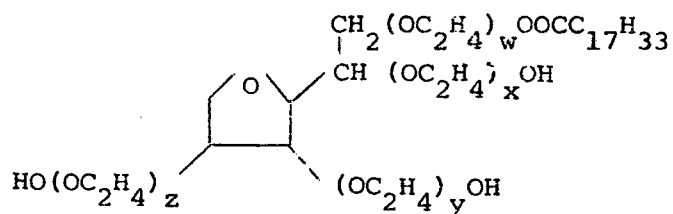
DISCUSSION AND CONCLUSION

From the results of this experiment, the general conclusions can be explained as the following:

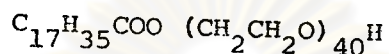
1. PEG base was very actively in releasing phenobarbital more than Witepsol S 55, Witepsol E 85 and cocoa butter plus 10% white beeswax. Because PEG base is a water soluble base, therefore the activity of drug depends on the drug dissolved. Besides it permits the convenient storage of these suppositories without need of refrigeration and without danger of their softening excessively in warm weather.

2. The various combinations of PEG 4000 and PEG 1500 were compared with the combination of 47% PEG 4000, 33% PEG 1500 and 20% PEG 400. It was found that the combination of 60% PEG 4000 and 40% PEG 1500 would give dosage form similar to the combination of 47% PEG 4000, 33% PEG 1500 and 20% PEG 400. PEG 4000 has average molecular weight 3000-3700 and dissolves in water at 20° about 62% w/w, while PEG 1500 has average molecular weight 1300-1600 and dissolves in water at 20° about 70% w/w. (14) If PEG 4000 was used more than 60%, its releasing rate was slow, while PEG 1500 in high percentage would give rapid releasing rate but unsuitable dosage form. Considering economically the two combinations of 60% PEG 4000 and 40% PEG 1500 are the most suitable bases.

3. The effect of surfactants on releasing rate of phenobarbital from PEG base. When the surfactants were added to PEG base, it was found that Tween 20, 40, and 60 did not have any effect on the releasing rate of phenobarbital, while 10% Tween 80 or 5% Myrj 52 had the positive effect, keeping PEG 1500 constant at 40% and varied PEG 4000 and Tween 80 or Myrj 52. Considering structural formula of Tween 80 and Myrj 52, Tween 80 is Polyoxyethylene sorbitan monooleate (20 oxyethylene groups)



while Myrj 52 is Polyoxyethylene stearate. (40, Oxyethylene groups). (10)



Myrj 52 has double oxyethylene groups, therefore Myrj 52 was used in lower concentration than Tween 80. It was also found that 15% Tween 80 and 10% Myrj 52 decreased releasing rate of phenobarbital, this might be predicted by the entrapment of the drug in micelles which were too large to be dissolved. Therefore 10% Tween 80 and 5% Myrj 52 are the optimum concentrations of surfactants which could be used to increase the releasing rate of phenobarbital from suppository base.

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