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Evaluation of solid dispersion systems of acetaminophen and ethyl cellulose, eudragit RS or RL and the effect of solvent used in preparation of these systems on characteristics of matrices

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Received: 2006/1/30 , Accepted: 2006/10/23

Objectives: Both physical mixtures of drug and polymers and their solid dispersion systems (SD) have been used in preparation of inert insoluble matrices. In some studies it has been shown that SD systems are more effective in controlling drug release rate. This study has been performed in order to evaluate the SD systems of acetaminophen (as a model drug) and ethylcellulose, Eudragit RS or Eudragit RL in preparation of sustained release matrices and to investigate the effect of solvent (ethanol, acetone or isopropanol) used in preparation of SD system on characteristics of matrices. **Methods:** SD systems were prepared by solvent evaporation method. Matrices were prepared from both physical mixtures and SD systems of drug and polymers and were characterized by hardness, friability and dissolution tests. **Results:** The results showed that matrices prepared from physical mixtures of drug and ethylcellulose were harder than those prepared from SD systems. Opposite results were observed for Eudragit matrices. The results of friability test were in agreement with the results of hardness test. Acetaminophen release rate was the slowest for matrices prepared from physical mixture of drug and ethylcellulose. However the use of SD system of drug and Eudragits resulted in decreasing drug release rate compared to matrices prepared from physical mixtures. Finally the result of this study showed that the type of solvent used in preparation of SD systems did not have any profound effect on compressibility of resulting films and therefore on hardness of matrices. It was also revealed that the type of solvent did not affect the release rate of drug form matrices of SD systems. **Conclusion:** The use of SD system was efficient in preparation of Eudragit and acetaminophen matrices (especially Eudragit RS) however no benefit was obtained in using SD system in preparation of ethylcellulose and acetaminophen matrices. The solvent used in preparation of SD systems did not affect the matrix characteristics.

Key Words: *Matrice, sustained release, solid dispersion systems (SD), solvent evaporation, ethylcellulose, Eudragit.*

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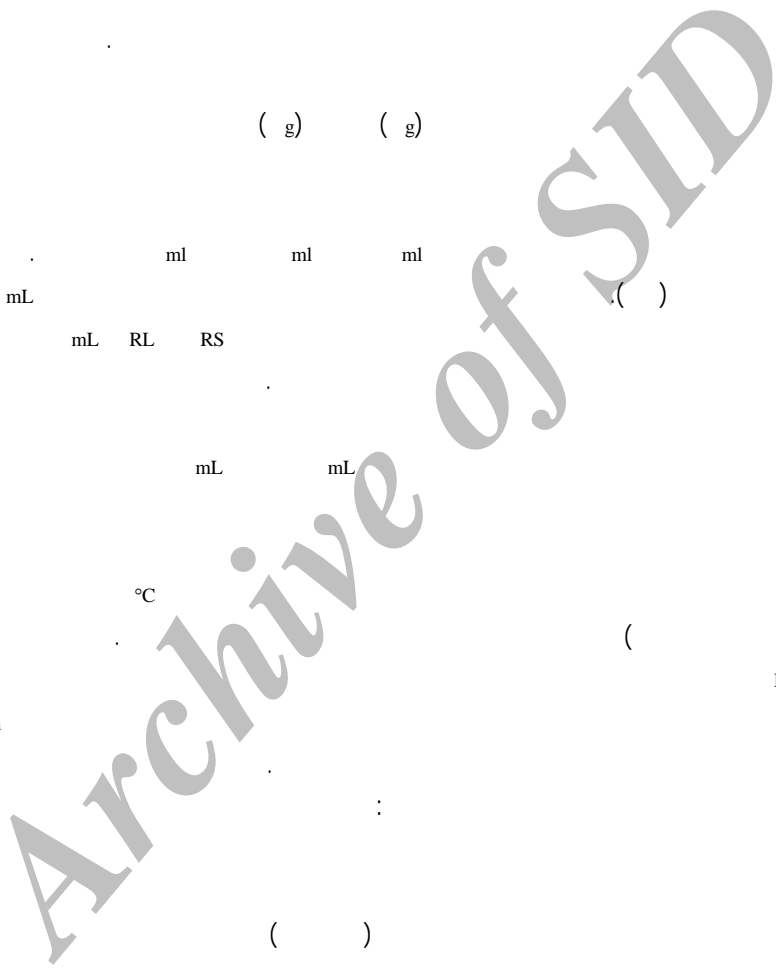
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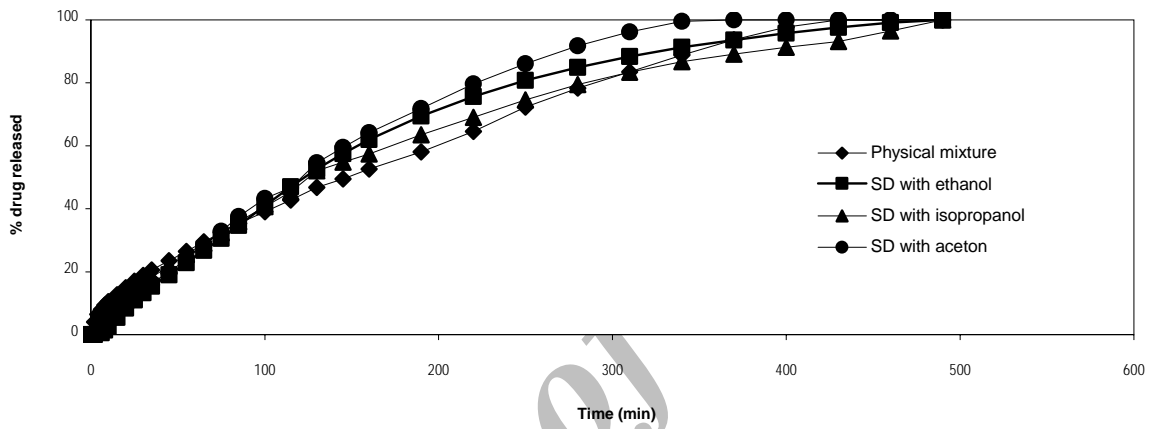


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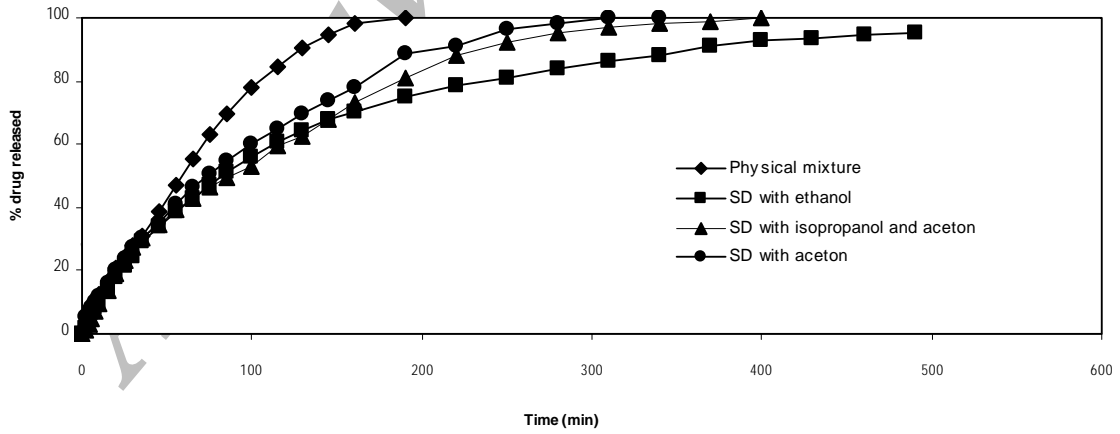
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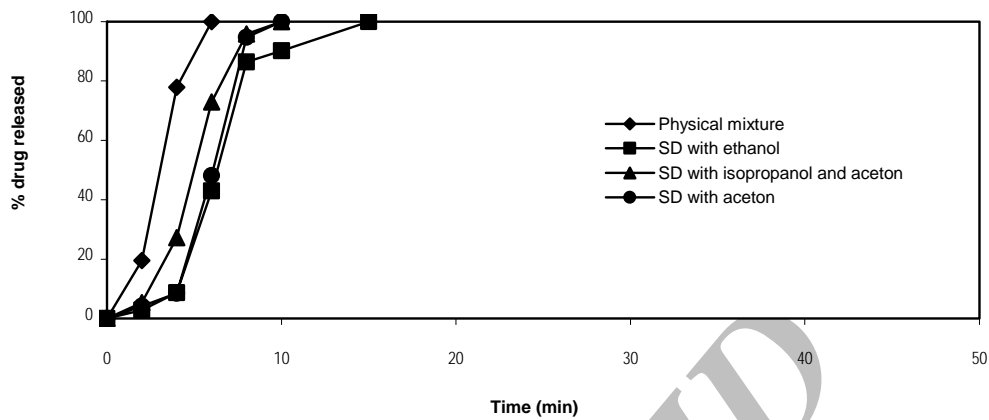


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