



## Formulation and Evaluation of Multilayered Matrix Tablets of Diltiazem Hydrochloride

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**SUMMARY.** In the present study matrix and multilayered matrix tablets of diltiazem HCl were formulated by using guar gum as matrix core component and cellulose derivative, Sodium Carboxy Methyl Cellulose (SCMC) as barrier layers. Marked difference in dissolution characteristics of D3 and D3L3 was observed and showed a statistically significant difference. The study revealed that the matrix tablets prolonged the release, but predominantly in a first order fashion. Layering with SCMC granules on the matrix core, provided linear drug release with zero order kinetics. Mean dissolution time for D3 and D3L3 were found to be 4.17 h and 16.45 h, while dissolution efficiency decreased, indicating slower drug release. *In vivo* transit time of the formulation D3L3 shows that it crossed the small intestine at 6 h and retained for longer time in colon at 12 h. FT-IR and DSC studies show there is no drug-excipients interaction. Stability studies portray that no change either in physical manifestation or in dissolution profile after storage at  $40 \pm 2$  °C/RH  $75 \pm 5$  % for 3 and 6 months.

**KEY WORDS:** Controlled release, Cellulose derivatives, Diltiazem hcl, Multilayered matrix tablets.

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