CONCLUSION
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In the present study, an attempt is made to design formulations at Bilayered tablets with one immediate release layer and another controlled release layer. The layered tablets are compressed to constant hardness by single punch machine.

The Friability test of all the tablet formulations show acceptable values of %wt loss. There was no delamination of immediate release layer which was compressed first to lower hardness.

The disintegration time of immediate release layer of all formulation lies 4.5 to 6.5 min.

During the in-vitro study, it was observed that the immediate release yellow layer was eroded/solubilised within 1st hr. of study consistently.

These observations suggests that the design and compression of bilayered tablets is successful, satisfying all formulation parameters.

The in vitro dissolution profiles of GP-I formulation indicate that change in ratio of Eudragits with variable permeability directly affect the release rate of theophylline from layer B matrices. Out of all four formulations, formulations F3 and F4 show consistent release of theophylline by Fickian diffusion, independent of pH of dissolution medium.

The drug release profiles and release kinetic data of GP-II formulations from different pH dissolution medium suggest that presence of HPMC makes the system swellable device (along with Eudragit) the release of drug is governed by Fickian diffusion and better fit in Higuchi equation: The later supports the time dependent drug release. Addition of Eudragit limits swelling, the release profile follow first order kinetics and become drug concentration dependent. The systems how superimposition of diffusion controlled and swelling controlled release patterns.

The results of in vitro release profiles of GP-III formulations at different pH dissolution medium indicate that increasing HPMC
proportion in hydrophilic matrices changes the release kinetics to follow Higuchi equation, and Fickian diffusion as seem in formulation F10 and F12. It also indicate that presence of HPC does increase gel layer growth creating more strong hydrophilic barrier which retards the release rate following first order of release as seen in formulation F11. The results indicate the roll of Methocel K4M as hydration controlling polymer which retards gel layer growth and contributes in controlling release rate of drug.

The overview of release behaviour of all formulations, f1 to F12, it can be concluded that, formulation F1 can be considered better giving zero order release in pH 1.2 dissolution medium and also at pH change conditions with consistent Fickian release.

Formulation F5 also show better and constant control of release rate of drug over 12 hrs. time period. The release rate follow first order kinetics and release mechanism is Fickian diffusion in both pH 7.2 and pH change mediums.

Formulation F1 can also be considered to exhibit better release retardant effect in both pH 1.2 & pH 7.2 dissolution mediums, the release mechanism being Fickian diffusion.

Study of results also show that almost total dose of CPM is available in solution within 45 minutes in both pH 1.2 & pH 7.2 mediums.

While immediate release of fraction of dose of theophylline (about 40% release) is exhibited by formulations F5 (34 to 50% release) in all different dissolution medium and formulation F12 (42% release) in pH 7.2 dissolution medium. The result indicate that inclusion of hydrophilic polymers as swellable device can modulate the release of drug from bilayered matrix tablets in Biomodal way.

In this way a successful combination of CPM and theophylline can be formulated in carefully controlled release system.