ABSTRACT

In the propose research work and initiative has been taken to design and report the result of rectal suppositories of atenolol an antihypertensive drug and aceclofenac a NSAID. Suppositories were formulated utilizing different water soluble and fatty bases Viz., gelatin, PEG-400 and hydrogenated vegetable oil in combination along PG as plasticizing and to produce hardening effect beeswax is added, and was prepared by fusion method. The statistical evaluation of drug released profile depicted that the drug liberation from formulated batches of suppositories has inhibited diffusion mechanism (r=0.9430 to 0.9890). The entire designed rectal formulations has shown linear, zero order drug release kinetics but those processed by employing 10 percent beswax weight/weight and gelatin suppositories not consisting of PEG’s has shown first order drug liberation profile. The batch of suppository utilizing 30 percent of PEG-400 weight/weight of gelatin has produced zero order liberation kinetics (r=0.9936) and liberated 99.10% of atenolol within 150 min. The D.SC and F.T – I.R examinations affirm that there is faint to no alternation intervening of bases and the active ingredient. The stability examination data recommended that there was no distinguishable variation in the drug content after a span of six months (p<0.005). The SEM images showed the uniform dispersion of the drug within the polymer with a minimum air entrapment. Entire designed rectal suppositories of aceclofenac has followed diffusion controlled release (r=0.9547 to 0.9967) as per the Higuchi’s equation and have shown zero order liberation profile apart from those developed by taking 15% and 20% of PEG-400. The suppository batch developed by utilizing 7.5 percent beeswax in hydrogenated vegetable oil has illustrated zero-order drug liberation (r = 0.9927) and has liberated 99.18% of the
aceclofenac upto 4 hours, hence, this formulated batch suppository can be considered as best batch of formulated suppository. The stability examination on the best batch of suppository formulation was done over a span of six months (180 days) and the result illustrated that there was no distinguishable variation in the drug content uniformity ($p<0.05$). Finally, ensured that the stable rectal suppository of atenolol and aceclofenac can be prepared by employing the above mentioned water soluble, fatty bases along with plasticizing and hardening agents by fusion method.

**Key Words:** Suppository, Atenolol, Aceclofenac, Diffusion, beswax, zero order, stability studies.