ABSTRACT

The present study is on the development of Hybrid drug delivery systems for candidiasis and cancer therapy. A hybrid drug delivery system is an unique dosage form, wherein the same mucoadhesive tablets can be delivered through multiple routes, either through oral/vaginal route for candidiasis and oral/vaginal/rectal route for cancer therapy. The effectiveness of the specialized drug delivery systems has been enhanced with the use of different combination of polymers in the form of interpolyelectrolyte complex (IPEC). Miconazole nitrate (MN) tablets were formulated for oral/ vaginal candidiasis using chitosan, carbopol 71G, carboxymethyl tamarind, IPEC. Chitosan, polycarbophil, sodium alginate, IPEC alone and in combination of different concentration ratios has been used in the formulation of 5-fluorouracil (5-FU) tablets for oral/cervical/colorectal cancer. IPEC were characterized by FT-IR, DSC and XRD studies. The tablets were fabricated by direct compression method using 8 mm flat-faced punches in KBr press and were evaluated for pre and post compression properties. Formulations containing IPECs showed pH independent controlled MN/5-FU release in buccal, vaginal pH/ buccal, vaginal and rectal pH respectively. In vitro mucoadhesion studies of IPECs formulations exhibited minimal mucoadhesive strength; moreover addition of other polymers to IPECs enhanced mucoadhesive strength. In vivo X-ray studies showed formulations were intact and adhered to the mucous membrane for over 8 h. Results of the stability studies showed that there were no significant changes in tablet properties. In conclusion, such type of hybrid drug delivery systems may be designed for those drugs which are intended to deliver through oral/vaginal/ rectal route.

**Keywords:** Candidiasis; Cancer; Hybrid; multiple route administration; IPEC; mucoadhesive.