**Abstract**

*Background:* Recently, the intranasal administration has been suggested as a potential direct route to transport pharmaceuticals into the brain through the olfactory and trigeminal nerves, bypassing the blood brain barrier. *Methods:* The nasal hydrogels were prepared by a cold method using pluronic F-12 and chitosan. *Results:* All the selected formulations were gelled at 30°C. The gelation time varied from 5 to 10 min. The mucoadhesive strength was adequate to provide prolonged mucosal adhesion. The formulations exhibited good drug content after stability period of three months. The permeability studies revealed a high permeation of the drug through the surgically removed nasal tissue. *Conclusion:* the results suggested that the obtained hydrogels might be suitable candidates for the nasal delivery of phenobarbital sodium.

X1 = Pluronic F-127 mass

X2 = Polyethylene Glycol 6000 mass

X3 = Soribitol mass

X4 = Benzalkonium Chloride mass

GT = Gelation time

DC = Drug content

GS = Gel strength

Gtemp = Gelation temperature

MS = Mucoadhesive strength

PH = pH

