5. SCOPE OF THE WORK

Digestive enzymes are considered beneficial for dyspepsia and as appetite stimulants. Marketed preparation contains α-amylase, papain, and pepsin, etc. either alone or with vitamins (like thiamine hydrochloride, riboflavin, pyridoxine, niacinamide, D-panthenol, simethicone, etc.) or with carminatives (like tincture cardamon, compound tincture ginger, sodium bicarbonate and peppermint oil, etc.) are available for use. Number of marketed formulations containing these enzymes and other vitamins were analyzed and it was found that the concentration of the enzymes were not at par the labeled claim (might be because of incompatibility of enzymes with vitamins and carminatives).

Pharmaceutical formulations containing digestive enzymes need to be stored at cold (2 – 8°C) or cool (8 – 25 °C) temperature conditions and still has the self-life of not more than one year. Entrapment of the enzyme in biodegradable biopolymers like chitosan, alginate and carrageenan using the technique of the ionotropic gelation or polyelectrolyte complex (PEC) may improve the stability of the parent enzymes (Dumitriu and Chornet, 1998) and make it less prone to interference of various formulation excipients. Immobilized enzymes are stable at higher temperature and might be stored at room temperature with extended shelf-life (Bickerstaff, 1997). Above advantages are of great commercial interest for the pharmaceutical industries hence it was the objective of the research to develop an extended shelf-life formulations of various digestive enzymes by entrapment in biodegradable biopolymers which results in better and efficient utilization of enzyme.

For the study purpose the three digestive enzymes namely, α-amylase, papain, and pepsin were selected. Similarly, three biodegradable biopolymers namely, alginate, κ-carrageenan, and chitosan were selected for the study.

5.1. References

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