Chapter-2

LITERATURE SURVEY
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Literature survey

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Drug Review

Stafylas PC\textsuperscript{105} et al., (2008) have shown that beta blockers decreased blood pressure by reducing peripheral vascular resistance hence used in hypertension.

Fardoun RZ\textsuperscript{106} et al., (2006) recommended carvedilol to maintain adequate blood pressure in patients with hypertension. Carvedilol also decreased cardiovascular risk factors in patients with both hypertension and type II diabetes mellitus.

Moser M\textsuperscript{107} et al., (1998) demonstrated that carvedilol reduced morbidity and mortality in patients suffering from congestive heart failure who are already receiving ACE inhibitors, diuretics and digitalis patients with congestive heart failure who are already receiving angiotensin converting enzyme inhibitors, diuretics, and digitalis.

Polymer Review

Abdul Ahad\textsuperscript{108} et al., (2011) prepared matrix type controlled release tablets of Glipizide using \textit{Abelmoschus esculentus} fruit mucilage and Povidone.

Avinash\textsuperscript{109} et al., (2012) studied the mucilage extracted from the pods of \textit{Abelmoschus esculentus} and subjected to preformulation study for evaluation of its suitability as emulsifying agent.
Bindu et al., (2013) isolated and characterized the mucilage from five species of *Abelmoschus esculentus* in pharmaceutical suspension preparation.

Dipak B. Manjule et al., (2012) isolated and characterized the mucilage from *Hibiscus rosa sinensis* linn for its identification by chemical tests, solubility, pH, ash value, loss on drying, compressibility index, angle of repose, bulk density, and tapped density.


Nduka et al., (2012) investigated the use of aloe gum from the mucilage of *Aloe vera* leaves for its binding properties in metronidazole based tablets.

Palshikar et al., (2010) evaluated the potentials of mucilage extracted from plant *Hibiscus cannabinus* as a tablet binder. The mucilage was extracted by using water as solvent and precipitated using ethanol as non-solvent. The tablets prepared with 4% of mucilage were found to be ideal and comparable with a commercial marketed preparation Crocin.

Palshikar et al., (2010) separated and evaluated the mucilage from seeds of plant *Hibiscus cannabinus* as a suspending agent. The formulation containing *H. cannabinus* mucilage as a suspending agent shows comparable results to that of standard marketed formulation i.e. Calcimax Suspension.
Formulation Review

Sharma\textsuperscript{119} \textit{et al.}, (2013) developed Rizatriptan benzoate nasal gel was developed using natural polysaccharide obtained from the \textit{Abelmoschus esculentus}. The gel formulation was characterized for pH, viscosity, mucoadhesion, and in vitro permeation.

Sandip\textsuperscript{120} \textit{et al.}, (2013) explored a bioadhesive polymer has been developed which was isolated from \textit{Aloe vera} (L).

Ravi Kumar\textsuperscript{121} \textit{et al.}, (2009) investigated the mucilage from the pods of \textit{Abelmoschus esculentus} was subjected to preformulation study for evaluation of its safety and suitability for use as suspending agent.

Jani\textsuperscript{122} \textit{et al.}, (2008) developed a sustained release matrix tabltets of diclofenac formulation using mucilage of \textit{Hibiscus rosanensis}.

Palshikar\textsuperscript{123} \textit{et al.}, (2010) evaluated the potentials of mucilage extracted from plant \textit{Hibiscus cannabinus} as a tablet binder. The gels prepared with 4\% of mucilage were found to be comparable with marketed preparation Crocin.

Saleem\textsuperscript{124} \textit{et al} (2012) prepared and evaluated Mupirocin loaded polymer composite films were prepared by using chitosan and sodium alginate alone and in combination with aloe vera, with \& without glutaraldehyde were prepared by solvent casting method.

Lehr\textsuperscript{125} \textit{et al.}, (1991) studied tensile strength shear strength of nasal adhesive gels, by clamping the model mucosal surface between two plates.
**Measurement of Mucoadhesion**

**Smart et al**\(^{126}\) (1996) evaluated mucoadhesive strength of NaCMC, CP 934, HPMC, gelatin, acacia, PEG, pectin, sodium alginate and tragacanth was measured by Wilhelmy plate method, using mucus from guinea pig intestine as model.

**Ishida**\(^{127}\) *et al* (1998) studied shear stress by using glass plates as model substrate by shearing stickiness apparatus.

**Gurney**\(^{128}\) *et al* (1984) studied shear stress of carbopol and sodium CMC by using Instron model 1114.

**Park**\(^{129}\) *et al* (1989) proposed the colloidal gold staining technique to study the bioadhesion which employs red colloidal gold particles that were adsorbed on mucin molecules in order to form mucin–gold conjugates. This upon interaction with bioadhesive hydrogels forms a red color on the surface which can be quantified by measuring at 525 nm.

**Katarina Edsman**\(^{130}\) *et al* (2003) has studied gels containing four different carbopol polymers and the corresponding mixtures for their dynamic rheological properties with porcine gastric mucin and bovine submaxillary mucin which does not give the same ranking order when two different comparison strategies were used. The results were contrast to the results obtained with the tensile strength measurements.

**Hassan**\(^{131}\) *et al* (1990) developed a simple viscometric method to measure mucin–polymer bioadhesive bond strength and observed a positive rheological synergism when chitosan solutions that were
prepared in pH 5.5 acetate buffers and in 0.1 M HCl, and mixed with a fixed amount of porcine gastric mucin. The mixtures prepared with mucin exhibited a viscosity greater than the sum of polymer and mucin viscosities.

Mortazavi et al. (1995) studied the effect of carbopol 934 P on rheological behavior of mucus gel and role of mucus and effect of various factors such as ionic concentration, polymer molecular weight, its concentration and the introduction of anionic, cationic and neutral polymers on mucoadhesive mucus interface.

Wheatly et al. used Ussing chambers to study the mechanism of transport across nasal mucosal tissue. They noted that the nasal delivery of insulin, mannitol, or propranolol follows a transport mechanism involving passive diffusion. The addition of deoxycholate (0.1 %) to the mucosal bathing solution was found that mannitol and insulin absorption was enhanced by 10 to 20-folds.

Carla Caramella et al. (2001) determined the effect of polymer concentration and polymer: mucin weight ratio on chitosan–mucin interaction and assessed by using viscosimetric measurements. The results showed that two different types of rheological interactions exhibited between chitosan and mucin in both media, depending on polymer concentration and polymer: mucin weight ratio.