LITERATURE REVIEW

- **C.A.Gilligan et al** (1991) studied the Factors affecting drug release from a pellet system coated with an aqueous colloidal dispersion. The formulation of sustained release pellets of dextromethorphan hydrobromide is described. They also investigated that post coating conditioning was important to ensure consistency of release rates.

- **Mansoor A. khan et al** (1995) evaluated the suitability of an experimental latex as a controlled release coating dispersion by preparing, optimizing and characterizing pellets of ibuprofen.

- **Deniz B. Beten et al** (1995) demonstrated the preparation of controlled release co-evaporates of dipyridamole by loading neutral pellets in a fluidized bed coating. System on industrial scale, omitting the recovery problems and milling and sieving processes encountered when co-evaporates are prepared by the conventional solvent evaporation technique.

- **Karl Thoma et al** (1998) studied the pH independent release of fenoldopam from pellets with insoluble film coats.

- **Umpprayn K et al** (1999) developed terbutaline sulphate sustained release coated pellets with ethylcellulose and a combination of ethylcellulose/ hydroxypropylmethylcellulose. The effects of fluidized bed polymeric film coats on the drug release were studied in vitro.

- **Claudio Nasruzzi et al** (2000) evaluated the influence of the formulation and operating conditions on pellet preparation by pan technique. To this end, a new pelletization process, typified by the application of powdered drug on sugar – based cores using the GS coating system was studied. Different procedure have been used to evaluate a series of important parameters such as initial core weight, speed of powder application, speed, type, and position of the atomizers, atomization degree, temperature, and air cap.

- **A.K.Nanda et al** (2000) developed and evaluated ethyl cellulose coated controlled release pellets of Isosorbide mononitrate and Carbamazepine. Pellets of isosorbide mononitrate and
Carbamazepine were prepared by suspension layering and powder layering techniques. Different processing conditions were optimized. The drug loaded pellets were coated with ethyl cellulose as release retardant.

- **Michael Newton et al**\(^{18}\) (2002) described pellets of different shape, varying from spherical to cylindrical, without and with film coating were tested for their drug release properties. For non disintegrating uncoated pellets, drug release was found to be inversely related to the pellets porosity. This suggested that the presence of the film coating changed the rate but not the mechanism of drug release.

- **Zezhi J. Shao et al**\(^{19}\) (2002) described the A newly polyvinyl acetate aqueous dispersion, Kollicoat SR 30D, was evaluated with respect to its ability to modulate the in vitro release of a highly water-soluble model compound (diphenhydramine hydrochloride) from nonpareil-based systems. Kollicoat SR 30D premixed with a selected plasticizer (10% wt/wt propylene glycol, 2.5% triethyl citrate, or 2.5% dibutyl sebacate), talc, and red #30 lake dye was coated onto the drug beads in an Aeromatic Strea I fluid-bed drier with a Wurster insert using bottom spray. With propylene glycol as the plasticizer, increases in polymer coating level retarded drug release from beads in a stepwise fashion along with apparent permeability, indicating a consistent release mechanism.

- **Roland Bodmeire et al**\(^{20}\) (2003) investigated the Coating of pellets with micronized particles by a powder coating technique. Pellets coated with ethylcellulose powder to achieve extended release. The film forming ability of ethylcellulose powder and the effect of formulation factors and curing conditions were investigated.

- **Weijia Zheng et al**\(^{21}\) (2003) investigated the influence of Eudragit NE 30 D blended with Eudragit L 30 D-55 on the release of phenylpropanolamine hydrochloride (PPA. HC1) from coated pellets. The presence of Eudragit L 30 D-55 also produced a film coating that was less tacky, and a dispersion of Eudragit NE 30 D containing Eudragit L 30 D-55 (5:1) was shown to prevent agglomeration of the pellets during coating and storage.

- **Wei Jia et al**\(^{22}\) (2004) developed a slow release formulation of indapamide, drug containing pellets coated with Eudragit RS100 to control the rate at which the drug was released. The two main variables were the agglomerates used in the pellet preparation and the amount of Eudragit RS100 used to coat them.
• Nisar – Ur – Rahman et al23 (2004) described the formulation and evaluation of controlled release diltazem pellets using Eudragit NE40. A release controlling film coat around diltiazem pellets was developed with Eudragit NE40 and effects of percent drug layering, pH, and stirring speed of dissolution media on drug release were evaluated.

• H. N. Shivakumar et al24 (2004) developed a pH sensitive multiparticulate system intended to approximate the chronobiology of angina pectoris for colonic targeting. The system comprised of Eudragit S100 coated pellets, designed for chronotherapeutic delivery of diltiazem hydrochloride.

• Preetanshu Pandey et al25 (2004) developed a practical scale – up model for a solvent based pan coating process. Practical scale up to determine the key parameters such as pan load, pan speed, spray rate, air flow require to control the process. The proposed scales up rules are based on macroscopic evaluation of the coating process. The effect of the key process variables on coat weight uniformity and membranes characteristic were also studied. Pan speed was found to be the most significant factor related to coating uniformity.

• P.W.S. Heng et al26 (2004) studied the influence of drying efficiency and particle movement on the degree of agglomeration and yield of pellets coated under different conditions.

• Mustafa Sinan Kaynak et al27 (2007) developed a formulation of controlled release Glipizide pellets using pan coating method.

• Ehab R. Bendas et al28 (2008) investigated that leaky enteric-coated pellets formulations are able to provide sustained input for drugs that have an absorption window, such as ranitidine hydrochloride, without jeopardizing their bioavailability.

• Shivkumar et al29 (2006) investigated multiparticulate system consisting of drug-loaded cellulose acetate cores encapsulated within Eudragit S-100 microcapsules was designed for chronotherapeutic delivery of ketoprofen. Drug-loaded cellulose acetate cores were prepared by emulsion solvent evaporation technique in an oily phase at different drug:polymer ratios
(1:1, 2:1 and 4:1). These cores were successfully microencapsulated with Eudragit S-100 following the same technique at the core:coat ratio of 1:5.

- **Padhee et al** (2011) worked on Organic acids such as fumaric & malic acid which were added to the drug–polymer system were added as a pH-adjuster inside the pellet core for the maintenance of constant acidic micro-environment inside the core of dosage form. Pelletization technique was selected for the formulation of verapamil HCL to reduce the inter individual variations in plasma levels.

- **Gandhi et al** (2011) developed and evaluated a multiparticulate system intended to utilize natural material for controlled drug delivery system. The system comprising of cashew gum coated pellets, designed for controlled drug delivery of Diltiazem hydrochloride.

- **Gattani YS** (2010) reviewed the current status of floating multiparticulate drug delivery systems including hollow microspheres (micro balloons), low density floating micro pellets and floating micro beads (acrylic resin based), microcapsules etc, their evaluation parameter, advantages, application, limitation and future potential for oral control drug delivery are discussed.

- **Rahman et al** (2005) developed a release controlling film coat around diltiazem pellets with Eudragit NE40 and the effects of percent drug layering, pH and stirring speed of dissolution media on drug release were also evaluated.

- **Jose et al** (2010) developed a Multiparticulate system containing chitosan microspheres for the colon targeted delivery of ondansetron for the treatment of irritable bowel syndrome.

- **Dev et al** (2008) noticed that multiparticulate drug delivery systems are especially suitable for achieving controlled or delayed release oral formulations with low risk of dose dumping, flexibility of blending to attain different release patterns as well as reproducible and short gastric residence time. The release of drug from microparticles depends on a variety of factors including the carrier used to form the multiparticles and the amount of drug contained in them.

- **Vikash et al** (2011) reviewed outlines the manufacturing and evaluation of pellets. There are various types of pelletization techniques like spheroidization and extrusion, pelletization by layering, pelletization by solution layering and direct pelletization.
• **Kandukuri et al** (2009) reviewed the outlines the manufacturing and evaluation of pellets. The manufacturing techniques include layering, cryopelletization, freeze pelletization, extrusion spheronization and hot melt extrusion have been discussed. Characterization of pellets is discussed with reference to the particle size distribution, surface area, porosity, density, hardness, friability and tensile strength of pellets.

• **Patel et al** (2010) reviewed that the pellets are for pharmaceutical purposes and are produced primarily for the purpose of oral controlled-release dosage forms having gastro-resistant or sustained-release properties or the capability of site-specific drug delivery.

• **Sharma et al** (2006) developed A multiparticulate floating-pulsatile drug delivery system using porous calciumsilicate (Florite RE®) and sodium alginate, for time and site specific drug release of meloxicam.

• **Jose et al** (1998) worked on a new multiparticulate system to deliver active molecules to the colonic region, which combines pH-dependent and controlled drug release properties. This system was constituted by drug loaded cellulose acetate butyrate (CAB) microspheres coated by an enteric polymer (EudragitÒ S). Both, CAB cores and pH-sensitive microcapsules, were prepared by the emulsion–solvent evaporation technique in an oily phase. Ondansetron (OS) and budesonide (BDS), two interesting drugs with a potentially new application for the local treatment of intestinal disorders, were efficiently microencapsulated in CAB microspheres at different polymer concentrations (6 and 8%).