2. LITERATURE REVIEW

Yerram C. et al (2013), had prepared a Microsponge containing acyclovir sodium as active constituent with four different formulation by changing the properties of drug(acyclovir sodium), polymer(ethyl cellulose), emulsifier(PVA) were obtained using emulsion solvent diffusion method. These formulations were studied for particle size and physical characterization.SEM images showed the Microsponges porous and spherical shape. 37

Deshkar et al (2013), had done study deals with the design and optimization of Prednisolone sodium phosphate (PSP) microspheres to target and activate the drug release at specific sites in colon. Combinations of pH dependent and microbial triggered polymers were employed to target the drug at the colonic region. It was demonstrated that the use of Quality by Design (QbD) principles, provide an effective means to achieve a greater understanding of process and formulation parameters for microsphere preparation. 38

Vora et al (2013), had studied effect of formulation variables on in-vitro release and permeation properties of carvedilol from transdermal patch was studied by varying one factor at a time as preliminary study. Based on these results, design of experiments technique was applied followed by regression analysis and response surface methodology to optimize formulation variables. 39

Mehta M. et al (2012), had prepared Controlled Release Microsponge Gel for Topical Delivery of Clotrimazole. Encapsulation of Clotrimazole into Microsponge would modified the release rate and also reduce side effects. Clotrimazole Microsponge was prepared by emulsion solvent diffusion technique by using Ethyl cellulose, HPMC K4M, Carbopol 934, Eudragit RS100, Eudragit S100, Eudragit RL100 and evaluated for % Practical yield, % Loading efficiency and In vitro drug release study. 40

Nevine et al (2012), had prepared Topical Fluconazole Microsponge Loaded Hydrogel. Ethyl cellulose (EC) and Eudragit RS 100 based Microsponges were prepared using quasi-emulsion solvent diffusion method. The effect of formulation variables such as drug to polymer ratio, polymer type, PVA concentration and type of internal phase on the physical characteristics of the Microsponges was examined using factorial designs. 41

Badir et al (2012), had prepared vancomycin (VCM) biodegradable nanoparticles to improve the intestinal permeability, using water-in-oil-in-water (W/O/W) multiple emulsion method. The vancomycin-loaded nanoparticles were created using double-emulsion solvent evaporation method Using Eudragit RS 100 as a coating material. 42
Thakur et al (2012), had prepared Gels dosage forms used as drug delivery systems considering their ability to control drug release and to protect medicaments from a hostile environment. Thus, it was desired in this study to formulate Fluconazole into a gel that could be used locally in the treatment of different skin fungal infections.  

Vinod L. et al (2012), had prepared various Carbopol (934 and 940) on drug release from Fluconazole gel formulation developed for topical application. Fluconazole (FCZ) is the first of a new subclass of synthetic triazole antifungal agent and it is commonly used in treatment of most fungal infections.  

Baksh A et al (2012), had prepared Topical gel formulations of Diclofenac sodium using Carbopol 934, Carbopol 940, sodium carboxymethylcellulose (Na CMC), polymer as a gel-forming material that is biocompatible and biodegradable. The skin permeation enhancer on release characteristics of the Diclofenac sodium from the prepared gels through a standard cellophane membrane was studied in comparison with commercially available gel formulations of Diclofenac sodium.  

Niyaz et al (2011), had prepared gel formulations which were characterized for drug content, pH determination, viscosity measurement, in vitro diffusion, antifungal activity and skin irritation.  

Patel et al (2011), was conducted study to develop a gel formulation of Aceclofenac using four types of gelling agents: Carbopol, hydroxy propylmethylcellulose (HPMC), Carboxymethylcellulose sodium (Na CMC) and sodium alginate. Effect of penetration enhancer (propylene glycol) on the release has been studied. The gels were evaluated for physical appearance, rheological behavior, drug release and stability.  

Nitesh Shah et al., (2011), prepared double coated systems comprising of pH independent (Eudragit RS 100) and pH dependent coatings (Eudragit S 100) of polymethacrylate for delivery of Metronidazole exclusively to the colon. The central composite design was used to optimize independent variables X1 (coating level of Eudragit RS 100) and X2 (coating level of Eudragit S 100) and study their effect on dependent variables Y300 (% drug released in the 5th h) and Y480 (% drug released in the 8th h).  

Sabyasachimaiti et al (2011), had studied the, Xanthan gum-facilitated ethyl cellulose Microsponges were prepared by the double emulsification technique and subsequently dispersed in a Carbopol gel base for controlled delivery of Diclofenac sodium to the skin. Scanning electron microscopy revealed the porous spherical nature of the Microsponges.
Increase in the drug polymer ratio increased their yield, drug entrapment efficiency, and mean particle diameter.  

Swetha et al (2011), were prepared Microsponges containing Ethyl cellulose and Eudragit RS 100 were prepared by Quasi-emulsion solvent diffusion method using Etodolac as a model drug. The effects of different drug to polymer ratios on physical characteristics of the Microsponges were investigated.  

Mishra M. et al., (2011), had prepared Eudragit RS 100 Loaded Microsponges and Subsequent Colonic Delivery. In the present work, Paracetamol loaded Eudragit based Microsponges were prepared using quasi-emulsion solvent diffusion method. Process parameters were analyzed in order to optimize the formulation.  

Shiv K et al (2011), had prepared different Amphiphilo gel formulations of Fluconazole for topical application were prepared by using Sorbian monostearate (span 60), Tween 80 and Tween 20, Iso-propyl myristate, purified water. The formulated Fluconazole were evaluated for psychorheological characteristic, drug content, pH, Spreadability.  

Swati et al (2011), had prepared antifungal paper soap strips of Fluconazole were prepared & evaluated for dermal infections because the presence of thick foam on the infected part causes hydration of stratum corneum for better penetration of drug. The formulation and evaluation of medicated soap strips were carried out in two phases.  

Senthil K. (2010), had prepared Enteric coated tablets of Didanosine were developed to get resistance from Gastric juice when it presents in stomach, because Didanosine is incompatible with gastric juice. The tablets are prepared by using wet granulation technique using polymer Ethyl Cellulose std 100 FP, Ethyl Cellulose Med 70 P, Ethyl Cellulose Med 50 P and other excipients.  

Sudhamani et al (2010), had prepared Ibuprofen; a non-steroidal anti-inflammatory drug was formulated as microspheres by using Ethylcellulose as carrier. These Ethylcellulose microspheres were prepared by the solvent evaporation method. The prepared microspheres were subjected to various evaluation and in vitro release studies.  

Gaddam A. et al (2010), had worked on Systemic Delivery of Diclofenac Sodium after Topical Application of Gels Incorporated with Drug-Loaded SLN. The aim of this study was to prepare and evaluate gels incorporating SLN of Diclofenac sodium for systemic delivery of the active after topical application.  

Jain V. et al (2010), had prepared Eudragit RS 100 Loaded Microsponges and Its Colonic Delivery Using Natural Polysaccharides. Microsponges were prepared using quasi-emulsion
solvent diffusion method. Shape and surface morphology of the Microsponges were examined using SCM. 57

Vikas et al (2010), had prepared Paracetamol loaded Eudragit based Microsponges were prepared using quasi emulsion solvent diffusion method. The compatibility of the drug with various formulation components was established. Process parameters were analyzed in order to optimize the formulation. 58

Modha et al (2010), had prepared Polymorphs of Fluconazole that lead to higher dissolution rate and improved bioavailability. Fluconazole polymorphs were prepared by single solvent crystallization method and characterized by x-ray diffraction, infra-red absorption spectrum, differential scanning calorimetry, melting point and particle size determination. 59

Mitkari et al (2010), had prepared Liposomes formulation for topical delivery of Fluconazole using the factorial design approach was undertaken. Amount of phospholipids (PL 90H) and cholesterol (CH) were taken at three different levels and Liposomes were prepared using film hydration technique. Gels containing Liposomes (optimized batch) were prepared in Carbopol® 934 NF and were characterized for rheology. 60

Rohit et al (2009), had prepared different formulations of Fluconazole in microemulsion base using isopropyl myristate as oil phase, Labrasol as surfactant and plurrol oleique as co-surfactant. Isopropyl myristate was selected as oil phase due to its good solublising capacity. Microemulsion existence region was determined using the pseudo-ternary phase diagrams for preparing different formulations. 61

Behera et al (2008), had prepared microencapsulated Glipizide produced by the emulsion–solvent evaporation method, Microspheres were prepared using polymethacrylate polymers (Eudragit® RS 100 and RL 100) by solvent evaporation method and characterized for their micromeritic properties and drug loading, as well as by Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy. In vitro release studies were performed in phosphate buffer (pH 7.4). 62

John et al (2008), had prepared Fluocinolone entrapped microporous Microparticles (Microsponges) to control the release of drug to the skin. Microsponges were prepared by previously optimized quasi-emulsion solvent diffusion method. Compatibility of drug with reaction adjuncts was studied by FT-IR and DSC. 63

Nokhodchi et al (2007), had prepared factors affecting the morphology of BPO Microsponges. BPO Microsponges were prepared using an emulsion solvent diffusion method by adding an organic internal phase containing BPO, ethyl cellulose and
dichloromethane (DCM) into a stirred aqueous phase containing polyvinyl alcohol (PVA) with stirring for about 8hrs until complete diffusion of DCM.  

Orlu et al (2006), had prepared colon specific drug delivery system containing Flurbiprofen Microsponges. Microsponges containing Flurbiprofen (FLB) and Eudragit RS 100 were prepared by quasi-emulsion solvent diffusion method. Additionally, FLB was entrapped into a commercial Microsponge® 5640 system using entrapment method. Afterwards, the effects of drug: polymer ratio, inner phase solvent amount, stirring time and speed and stirrer type on the physical characteristics of Microsponges were investigated. 

Jelvehgari et al (2006), had worked on the preparation characterization and release studies of Benzyle peroxide Microsponges. The effect of drug/polymer ratio on topography, particle size and size distribution and porosity were analyzed. According to the results, the topographical study shows that the Microparticles obtained were spherical and contain interconnected pores (appearing like a sponge); with increase in drug/polymer concentration the porosity and the mean particle size of the sponges decreased.

Comoglu et al (2003), had prepared Microsponges containing Ketoprofen and Eudragit RS 100 by quasi-emulsion solvent diffusion method. The effects of different mixing speeds, drug/polymer ratios, solvent/polymer ratios on the physical characteristics of the Microsponges as well as the in vitro release rate of the drug from the Microsponges were investigated. All the factors studied had an influence on the physical characteristics of the Microsponges.

Gonul et al (2002), had worked on the effect of pressure and direct compression on tableting of Microsponges. In this study Ketoprofen was used as a model drug for systemic delivery. The Ketoprofen Microsponges were prepared by quasi emulsion solvent diffusion technique using Eudragit RS 100 as the polymer.