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Abstract

Spray dried drug delivery systems for ileo-colonic targeting

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Abstract:

Introduction: Colon drug delivery system has witnessed a huge interest for developing drugs for local treatment. Colonic region is important for drug delivery and absorption. The benefits include low enzymatic activity, high residence time and treatment of colonic disorders such as ulcerative colitis, Crohn disease, carcinoma and several infections. In order to design a colonic drug delivery system, factors such as colon pH, colonic microflora, transit time and drug absorption should be considered.

Method: Mesalazine was prepared as solid dispersions using polyvinylpyrrolidone (PVP) and methacrylic acid –methacrylate copolymer (Eudragit S 100). Differential Scanning Calorimetry (DSC), Thermogravimetric analysis (TGA) and X-ray diffraction (XRD) were used to examine and identify the drug polymorphism. Spectroscopy analysis (FT-IR) was used to identify any possible interaction between the polymers and the drug. In-vitro dissolution studies were performed to determine the percentage release of the formulations. According to ICH requirements, stability studies for the drug product were accomplished.

Results: Thermal analysis (DSC and TGA) and X-Ray diffraction confirmed the amorphous nature of the solid dispersions 1 and 2. The molecular interaction between the polymers and the active ingredient mesalazine was confirmed by determining the peak shifts in FT-IR. In-vitro dissolution studies have manifested a higher cumulative percentage release of solid two dispersions (145.6% ± 9.79) compared to solid one dispersions (84.5% ± 10.8) at pH 6.8. While at pH 7.2 SD1 has released 71% ± 3.31 and SD2 96.9%± 6.68. Both order dispersions formulation showed a degradable profile during stability studies in accelerated conditions 40±2 °C and 75±5 % RH. Conclusion: Both solid dispersions formulations have failed to reach the specified requirements during in-vitro dissolution studies and stability studies. However, the results obtained from thermal analysis and FT-IR were not able to show a partial significant supportive correlation. Hence further analysis is required to develop the drug for CDDS.

Biography:

Klesta Durraj has completed a Pharm.D in University of Medicine Tirana, Albania in 2016. She has been working for two years as Regulatory Affairs Specialist at Profarma sh.a pharmaceutical industry. Recently she has pursued a MSc in Pharmaceutical Science with management studies from Kingston University London, United Kingdom.

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