



FORMULATION AND EVALUATION OF ANTIFUNGAL MICROSPHERES OF *Aegle Marmelos* LEAVES

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ABSTRACT

This study aimed to formulate and evaluate antifungal microspheres using extracts from *Aegle marmelos* leaves. Three different types of polymers, namely HPMC, Carbopol 934, and Carbopol 940, were used to develop the microspheres. The microspheres were characterized for various physicochemical parameters such as angle of repose, bulk density, tapped density, Carr's Index, and Hausner's ratio, which revealed satisfactory flow properties. The phytochemical analysis of *Aegle marmelos* leaves confirmed the presence of antifungal compounds such as flavonoids, alkaloids, saponins, steroids, and tannins. The *in-vitro* drug release profile demonstrated sustained release characteristics, with the microspheres formulated using Carbopol 940 showing the most promising drug release pattern. The study provides a promising pathway for the development of a potent, sustained-release antifungal treatment based on natural products, with potential for further exploration and optimization.

Key words: MICROSPHERE, *Aegle Marmelos*, *In-vitro* DRUG RELEASE, HAUSNER'S RATIO, CARR'S INDEX

INTRODUCTION

The significant advancement in pharmaceutical research over the years has led to the development of numerous drug delivery systems, each with its unique characteristics aimed at improving the delivery and bioavailability of therapeutic agents. Among these, microspheres have gained widespread attention due to their controlled and sustained drug release potential. By encapsulating the active pharmaceutical ingredient (API), microspheres protect it from degradation while ensuring a continuous supply to the target site, thereby enhancing therapeutic efficacy and reducing side effects [1].