3.0 OBJECTIVE OF THE PRESENT RESEARCH INVESTIGATION

The traditional use of excipients in drug formulations was to act as inert vehicles to provided necessary weight, consistency and volume for the correct administration of the active ingredient, but in modern pharmaceutical dosage forms they often fulfill multi-functional roles such as modifying release, improvement of the stability and bioavailability of the active ingredient, enhancement of patient acceptability and ensure ease of manufacture.

A large number of plant-based pharmaceutical excipients are available today. Many researchers have explored the usefulness of plant-based materials as pharmaceutical excipients. Natural gums can also be modified to meet the requirements of drug delivery systems and thus can compete with the synthetic excipients available in the market.

Today we have lot of pharmaceutical excipients such as starch, agar, alginates, carrageenan guar gum, xanthan gum, gelatin, pectin, chitosan, acacia, tragacanth, celluloses, sugars, etc., and most of them are from plant origin. These natural excipients find application in pharmaceutical industry as binding agents, disintegrants, sustaining agents, protective, colloids, thickening agents, gelling agents, bases in suppositories, stabilizers and coating materials. In the design of sustained release dosage forms, they retard the drug release by forming a thick retardant gel layer.

For centuries, the Mango tree (Scientific name: *Mangifera indica*, Family: Anacardiaceae) has been an integral part of life in India. Synonyms of the plant include Sanskrit: Ambrah, Hindi: Aam. The genus *Mangifera* contains several species that bear edible fruit. Most of the fruit trees that are commonly known as mangos belong to the species *Mangifera indica*. The other edible *Mangifera* species generally have lower quality fruit and are commonly referred to as wild mangoes. Each and every part of the tree (bark, leaves, root and kernel seed fruit) serves a certain purpose, for instance, as diuretic, astringent, aphthous stomatitis, diabetes, asthma, diarrhea, urethritis, dysentery, scabies and 11 other parasitic skin diseases.

Literature survey reveals that comprehensive physicochemical characterization and pharmaceutical application of the *Mangifera indica* gum (MIG) as a sustaining agent in tablet formulation has not been reported yet. So in the present investigation, an attempt will be made to extract and purify the *Mangifera indica* gum followed by physicochemical and phytochemical
characterisation of the extracted gum, toxicity studies and exploration of different pharmaceutical applications of extracted gum in pharmaceutical formulations.

Jackfruit (*Artocarpus heterophyllus Lam.*) grows in many parts of Asia, but is abundant in India and Bangladesh. Its distribution is continuous on the western coast of India with high rainfall up to Konkan and sporadic in the areas with low rainfall. In Western Ghats, it is found up to 1500 m and has tremendous diversity. *Artocarpus heterophyllus* possesses known antibacterial, antifungal, antidiabetic, anti-inflammatory, antioxidant and antihelmintic activities. The sustaining effect of the extracted gum will be analyzed followed by the physicochemical and phytochemical characterisation of the extracted gum.

The synthetic polymers such as ethyl cellulose, polyvinyl pyrrolidone, hydroxyl propyl methyl cellulose etc were used for the formulation and preparation of the tablets and comparison of the formulations with the sustained release effect of the natural gum formulations prepared.