

Isolation and Evaluation of the Gum from *Cyclea Peltata* Leaves as a Binder in Tablet Formulation

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Binders are essential excipients in tablet formulation, contributing to the cohesiveness and mechanical integrity of compressed tablets. Natural gum from *Cyclea peltata* leaves can serve as an alternative tablet binder to conventional agents such as maize starch, addressing the growing demand for safe, biocompatible, and sustainable excipients over synthetic binders. To develop a robust and reproducible method for extracting gum from *Cyclea peltata* leaves for use as an alternative tablet binder, and to rigorously assess its suitability and efficacy as a binding agent in pharmaceutical tablet formulations. 100g of mature, healthy *Cyclea peltata* leaves were harvested, washed, shade-dried and mechanically comminuted. For gum extraction, the commuted leaf material was soaked in distilled water and then heated at 70 °C for mucilage release. The extract was filtered, concentrated using a rotary evaporator, and precipitated by treating with cold ethanol. The resulting precipitate was dried, pulverized, and utilized to formulate placebo tablets as a binder via wet granulation, followed by standard evaluation tests as per British Pharmacopoeia. The tests included hardness, friability, disintegration, weight variation, and thickness and diameter. The extraction of gum from *Cyclea peltata* leaves yielded 12.75% and the extraction was optimum in the presence of ethanol to sample in a ratio of 3:1. The tablets formulated reported an average hardness of 42.4 N and negligible friability, indicating good mechanical strength and satisfactory resistance to abrasion. Disintegration time and average tablet weight of the formulated tablets were 12.85 minutes, 227.96 mg respectively confirming all the tablets passed the hardness, friability, disintegration, uniformity of weight, and thickness and diameter tests. According to the findings of the study, gum from *Cyclea peltata* can be extracted effectively with ethanol: sample ratio of 3:1. Promising results for placebo tablet properties are suggesting that *Cyclea peltata* gum can be utilized as an excipient, in place of conventional binding agents contributing to the development of sustainable and natural excipients for pharmaceutical tablet manufacturing.

Keywords: *Cyclea peltata* gum, binder, tablets, binding property, formulation