

The use of plant-derived biomaterials as drug formulation excipients: an application of biomimetics in dosage form development

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ABSTRACT

Introduction: To develop an active drug into a suitable dosage form, pharmaceutical scientists combine various excipients (additives) obtained from different sources. Considering the trends of advancements in the field of biomimetic, we hypothesize that biomaterials contained in different plant parts have inherent biological properties that can mimic what is desired of a drug excipient. In this project, the researchers seek to explore a range of plant-derived constituents and analyses them towards optimizing their use as pharmaceutical excipients in dosage form development.

Method: A range of desired pharmaceutical product qualities was selected to be the focus of the study. Following this, a comprehensive literature survey is being carried out to identify plants and herb parts with documented records of possessing these desired traits in their composition and biological activity. The availability of these plant parts in Africa is also being considered. The identified plant parts will be collected, after which the constituents of interest will be extracted from them. These constituents will be characterized and optimized for the prospects of enhancing pharmaceutical formulations, leveraging their natural pathways of activity.

Results: The following dosage form properties have been identified as the primary considerations in this study: bioadhesion/mucoadhesion, disintegration, solubilization, binding, thickening, and taste enhancement. A literature survey is ongoing to determine what plants elicit these properties in their natural life cycles. The outcome of this literature exploration will guide the plant procurement and extraction phases.

Conclusion: Driven by the possibility of having plant constituents replicate their biological characteristics upon incorporation in pharmaceutical dosage forms, this study expects to generate usable biomimetic-derived drug excipients in a bid to make final pharmaceutical products more affordable and therapeutically effective.

Keywords: *dosage form, pharmaceuticals, excipients, biomimetics*