

## **Influence of Diluents and Binders on the Yield, Friability, and Flowability of *Alpinia galanga* Extract Granules**

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### **ABSTRACT**

*A public increasingly wary of the use of antibiotic growth promoters in animal husbandry, and growing bans on their use, has led to an increased interest in alternative means of drug replacement using plant extracts. *Alpinia galanga* extract is one such alternative because of its several beneficial effects for promoting animal growth. However, *A. galanga* extracts prepared from maceration of the plant rhizomes are sticky, semisolid, unable to flow, and difficult to mix with other feed substances. These physical characteristics, as well as its pungent odor, make it difficult to use the extract “as is” as a feed supplement. This study aims to examine the potential of certain diluents and binders commonly used as excipients in granule preparation for improving the characteristics—yield, friability, and flowability—of the *A. galanga* extract.*

*The results showed that the type and concentration of diluent and binder affected the friability and flowability as well as yield of the *A. galanga* extract granules. Of the three diluents used in this study, tapioca was found to be the most suitable diluent for producing *A. galanga* extract granules. The use of a binder in granule production, particularly starch paste, decreased granule friability and increased the yield. Furthermore, using a combination binder ñ starch paste with either polyvinyl pyrrolidone or gelatin, significantly increased the desirable characteristics of the granules over the single binder. Starch paste and polyvinyl pyrrolidone potentiated *A. galangal* extract granules with the highest flowability, whereas starch paste and gelatin provided the granules with the least friability and the highest yield.*

**Keywords:** *Alpinia galanga*, Plant extract, Granule, Diluent, Binder

### **INTRODUCTION**

*Alpinia galanga* (Zingiberaceae) is an indigenous medicinal plant found in the tropics, particularly in China, India, Thailand, and other Southeast Asian countries. The rhizomes of this plant are used extensively for flavoring food and as traditional medicine for various ailments. In China and Thailand, it is used as a folk medicine for stomach health. This plant is used also as an antiseptic and