

# CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam  
Ahmed Tariq Jameel  
Azura Amid



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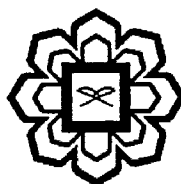
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**Department of Biotechnology Engineering  
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## CHAPTER 13

### GUM ARABIC: A NARRATIVE EMULSIFYING AGENT

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#### ABSTRACT

This study is an effort to explore the potentials of Gum Arabic (GA) as a *halal* food additive focusing on its emulsifying properties. Emulsions are prepared by vigorously shaking the mixtures of oil phase and aqueous phase containing this emulsifier. The effect of various processing parameters of the amount of emulsifier, the standing temperature as well as the oil to aqueous phase ratio on the emulsification activity were investigated using *Hashab* Gum Arabic and *Talha* GA emulsifiers. The optimal conditions in using GA as emulsifier were evaluated and verified as a preferred food additive due to its natural purity and *halal* features. The optimal amount of GA used was 20% (w/v) and the temperature was 65°C, while the ratio of oil to aqueous phase was not affected directly.

**Key words:** Emulsifying, food additive, Gum Arabic (GA), *halal*.

#### INTRODUCTION

Gum Arabic (GA) is the subject of this project (Fig. 1). To assist the readers to understand the project more thoroughly, many aspects of GA are explained in this chapter. These aspects include the types, general structure, properties and applications of GA, especially as an emulsifier and coating material. This chapter also contains the theories of emulsification and encapsulation.



Figure 1: (A): *Acacia Senegal* Trees with GA Exudation. (B): GA Available in Crystal, Kibble, Powder, and Granules Source: Gum Arabic Company Limited, Sudan.