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Hygienic Travel Soap from Dabai Fruits Oil

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ABSTRACT

Dabai fruit (*Canarium odontophyllum*) is an exotic fruit founded in Sarawak and have been locally known by its richness in nutritional values. Dabai fruits is prominent among locals due to its high level of antioxidants which contributes to the development of health and beauty. In this research, pure oil of Dabai was successfully extracted from its fruit through Soxhlet extraction process. The pure Dabai oil was then used in saponification process in the process of making travel soap. Dabai oil was further analysed using ATR-FTIR for identification of flavonoid compound. Dabai travel soap is invented for the purpose of hygiene and avoid continuous reinfection between users. The Dabai soap is fabricated like small ball size, dissolve during handwashing and leave no residue. In result, single use soap will prevent spreading of diseases. This also to create portable and user-friendly soap for people to enhance frequent hand-washing culture. The usage of Dabai oil in inventing Dabai travel soap is also to replace palm oil in saponification process. The travel small ball soap is invented to improve the coverage area during hand-washing activity as compared to paper thin soap which has been invented previously. Travel small ball soap is easier to use since it can be roll in between fingers to make sure hand-washing process is more effective to kill all microorganisms on the hands surface area.

Keywords: *Canarium odontophyllum*; travel soap; antioxidants; antimicrobial

1. INTRODUCTION

Canarium odontophyllum which commonly known as "Dabai" and 'Sarawak olive' is abudantly found in Sibu, Malaysia [1] (Chua et al. 2015). In Malaysia, *Canarium odontophyllum* have been identified as the most popular one compared to the other three Canarium species [2] (Azrina et al. 2009). Dabai is white in colour when not matured and purplish-black when it is ripe. Dabai fruit is found to be a very good source for high energy, protein and fat, as well as minerals such as calcium, magnesium, phosphorus [3,2,4] (Voon and Kueh 1999; Azrina et al. 2009; Faridah et al. 2009). [5] Chua & Nicholas (2009) stated that kernel of Dabai fruit contains high percentage of protein and fat meanwhile the skin part is high in moisture and ash. Dietary fibre in dabai fruit is mainly insoluble dietary fibre. Moreover, Dabai fruits exhibited high antioxidants such as phenolic acids, flavonoids and anthocyanians. Phenolic compounds have been found to be very beneficial for chronic diseases such as cancer, heart disease and

diabetes and possessed excellent anti-inflammatory, cholesterol-lowering, plague-reducing and anti-microbial agents [6] (Azlan et al. 2012).

Bar soap does seem to be self-cleaning, but the bar can still hold bacteria. Bar soap has become one of the source of continuous reinfection because bars of soap does not usually dry all the way between uses, especially on the bottom, leading to an accumulation of bacteria, fungi, that can be passed from person to person during usage. Next, liquid soap was recommended over bar soap, but this create unnecessary problem during travel where liquid soap may leak due to pressure on the flight. Therefore, a single use soap in solid form might solved both problems, no transmission of disease or bacterial residue and no leaking in a bag.

2. INNOVATION DEVELOPMENT

This research aims to invent a single use travel small ball soap from pure oil of Dabai oil (Figure 1.0). The single use travel small ball soap of Dabai is a hygienic travel soap exhibited antimicrobial properties which will help in the preventing of diseases spreading. This research also aims to provide an alternative to replace palm oil in the saponification process for making soap. With the invention of user-friendly small ball soap, the travel small ball soap of Dabai aims to create awareness of people to do frequent handwashing to prevent spreading of infected diseases.

Travel small ball soaps consists of an ionic surfactant which can be used in conjunction with water for washing and cleaning. It is portable, cheap, and easy to use. Many people use paper soap—paper-thin soap sheets—as an alternative to bar and/or liquid soap. This is due to the fact that it is easy to carry, store and use especially for travel, but quickly dissolves in water without leaving behind residual soap scum in a soap dish or on a sink as typically seen with wet soap bars or dripping soap dispensers. The small ball size soap invented in this research is mainly to improve the coverage of paper-thin soap which has been invented previously. Travel small ball soap is easier to use since in can be roll in between fingers to make sure hand-washing process is more effective to kill all microorganisms on the hands surface area.

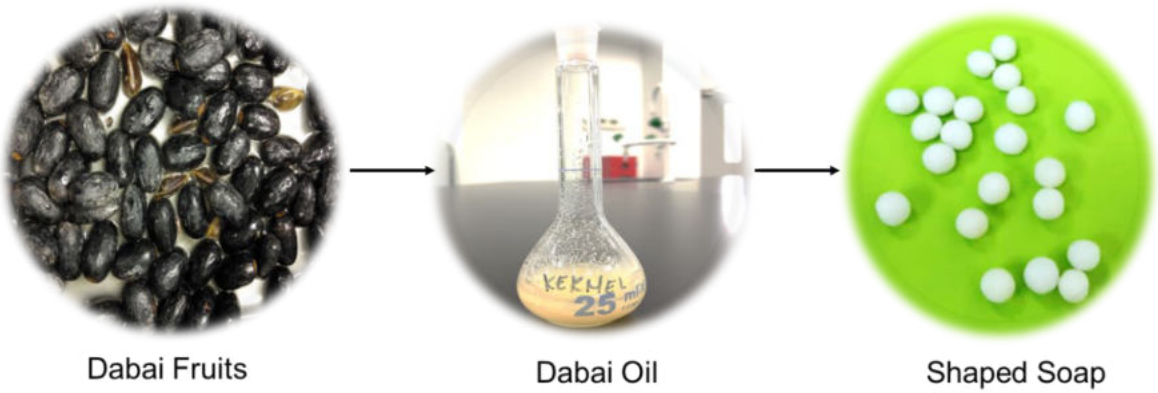

Figure 1: Preparation of small ball soaps from Dabai fruits oil

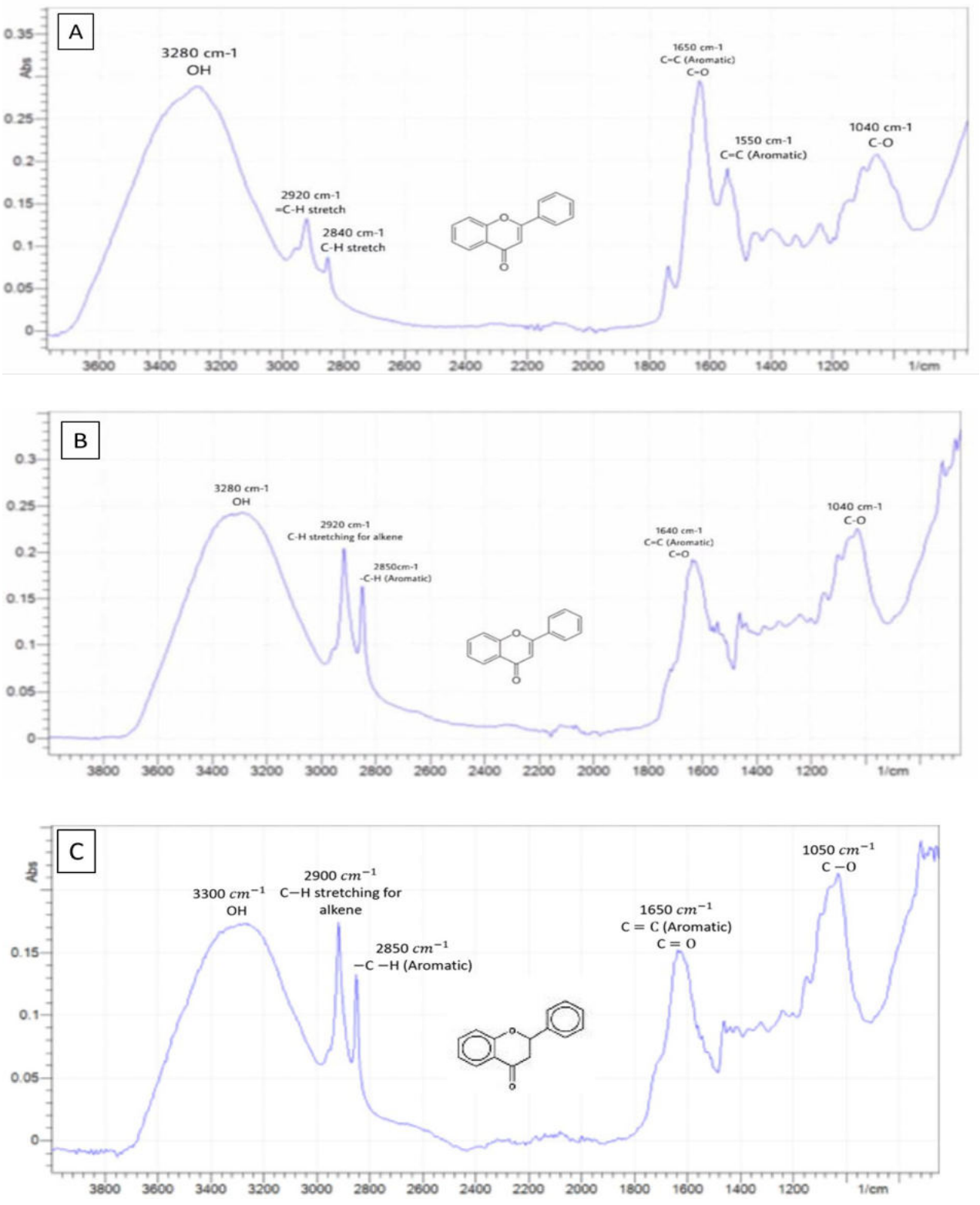

Figure 2: ATR-FTIR spectrum of Dabai: **(a)** Kernel **(b)** Skin **(c)** Pulp. These spectrums indicate the presence of flavonoid compound which has antioxidant properties that is beneficial to the skin

3. COMMERCIAL POTENTIAL

Hygienic Dabai travel small ball soaps are simple, easy to use, user friendly and has antioxidant properties for skin. This hygienic travel soap serves as a tool to provide a solution for travellers to maintain their hygiene environment during travelling.

4. CONCLUSION

The invented travel soap will be the first travel small ball soap using pure oil from Dabai fruit which exhibited antimicrobial properties and contain antioxidant compound (flavonoid). This travel small ball soap is single used, user friendly, easy to carry and more effective as compared to thin paper soap (previously invented) as it covers high surface area during hand-washing process.

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