

Determination of the Effectiveness of Hal Bark (*Vateria copallifera*) as a Natural Preservative for Food Security of Confectionery Industry

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Abstract

Hal (*Vateria copallifera*) bark can be used to control sugar fermentation process by yeast. Therefore, it was subjected to sun, mechanical, shade and cooling with dehumidified (CD) drying processes in order to identify the best drying method. 1.5 g of dried bark from four drying processes were introduced into four, 40% sugar (sucrose) solutions to identify the best drying method in terms of froth formation. In addition, 1.5 g of hal bark was introduced into 30%, 40%, 50% and 60% sugar solutions to determine at what sugar concentration that hal bark is capable to control sugar fermentation. Moreover, 0.5, 1.0, 1.5, 2.0 and 3.0 g of bark from the best drying method were introduced into 50% sucrose solutions to determine the level that Hal bark can be incorporated into sugar solutions without changing the sugar taste. Finally, optimum level of Hal bark was introduced into 50% sugar solution and levels of reducing, non-reducing and total sugars against the control were monitored. Sugar solutions were inoculated with 1.0% yeast.

The best drying method was CD as it was capable to control sugar fermentation at 40% sugar level and others had it at 50% level. Sensory evaluation revealed that up to 1.0 g of hal bark can be incorporated into 100 ml of sugar solutions without disturbing to the sugar taste. While 1 g of hal bark was capable to control sugar fermentation at 50% sugar level, control had same performance at 60%. 1.2 g of Hal bark from the best drying method in 50% sugar solution was capable to maintain reducing, non-reducing and total sugars unchanged against the control.

Keywords: Vateria copallifera, copalliferol, reducing sugar, non-reducing sugar, hal bark

1. Introduction

Hal (*Vateria copallifera*) tree is native to Sri Lanka and its bark has been used for long time by rural folk in some areas of the country as an age old practice to prevent sugar-yeast fermentation process in treacle (Dassanayaka and Forberg, 1980). As this plant is widely available in the natural habitats of south west region, particularly on the hill sides and the river banks of the country, peasants in these areas incorporate a small piece of this bark to the treacle just after accomplishment of the boiling process of the sap water of Kitul (*Caryota urens*) or Coconut (*Cocos nucifera*) (Kostermans, 1982). As yeast govern fermentation process of the treacle badly affecting to its keeping quality as well as to its organoleptic properties, the domestic scale producers have discovered that hal bark is the ideal

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