

**ASSESSING THE EFFECT OF INCORPORATING  
KITHUL (*Caryota urens*) FLOUR  
ON STABILIZING ABILITY  
AND  
SENSORY PROPERTIES OF SET-TYPE YOGHURT**

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By

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## ABSTRACT

Kithul flour is the water soluble carbohydrates extracted from the pith of Kithul tree (*Caryota urens*). It has high level of polysaccharides (Rajyalakshmi 2004) which may possess stabilizing ability and may be useful to replace the existing stabilizers (gelatin) in set-yoghurt manufacturing. Presently, adding stabilizers as a blend is more widely used approach in the dairy industry and it leads to overcome limiting properties associated with a specific compound and to achieve significant cost saving. Therefore, this study was carried out to assess the effect of incorporating water-soluble carbohydrates extracted from the pith of Kithul plant on stabilizing ability and sensory properties of set-type yoghurt.

Fresh cow milk (fat 3.3%), Sugar, kithul flour, gelatin and skim milk powder starter culture (YC 350 CHR Hansen) and kithul flavor were used to prepare the yoghurt mix. In order to find out the best combination of kithul flour and gelatin trial and error method was used. At the end of each and every trial the yoghurts were checked for their gel strength with time. First trial was carried out to find the best level of kithul flour in four levels as 0.9%, 1.2%, 1.5% and 1.8% without adding gelatin. Each treatment was replicated three times and evaluated for sensory properties such as mouth feel, taste, texture, colour, odor and overall acceptability using trained sensory panel. Then, the selected level was used to find the best ratio of kithul flour: gelatin. The gelatin level was changed as 0.1%, 0.2%, 0.3% and 0.4% with the selected level of kithul flour. In final trial, the best ratio of gelatin: kithul flour was selected. Chemical tests were carried out to find out the fat content, total solid content, titratable acidity and pH of the final product with storage period and compared with a control (existing set-yoghurt). Microbiological tests were carried out for yeast & mould (CFU/g) and coliform (CFU/g) during storage period. Data were analyzed using one way ANOVA (CRD) and Friedman non-parametric test in MINITAB 14 software package.

As a special benefit found during this product development was the absence of a cream layer, separated during the yoghurt production. Results of this study support that the use of 1.5% (w/v) kithul flour was able to replace 0.7% (w/v) gelatin without affecting the texture, colour, taste and odor of yoghurt having 27.7% of total solids. By that, the recommended percentage of gelatin was reduced from 1% to 0.3%. In addition to that,

incorporation of kithul flour in to yoghurt lowers the post fermentation acidification compared to the control during refrigerated storage. As the specifications of final product (titratable acidity and microbial population) were within the prescribed SLS standards, the product had storage life of thirty days at  $4 \pm 1$  °C without any quality deterioration.

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