

Micro-structural characterisation of palm fruit at stages of sterilisation and digestion in relation to oil expression

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ABSTRACT

Micro-structural characterisation of palm fruit was carried out under different conditions of sterilization and digestion. Samples were sterilised at 30, 60 and 90 min, digested for 3, 5 and 10 min and subjected to micro-structural analysis under transmission electron microscope. The analyses indicate increase in cell content disintegration and the possibility of oil release increase with increase in sterilisation time and digestion time. It is evident that the objective of reaching oil point quickly and hence achieving high oil yield can be met by different combinations of the processing operations and this would be useful in the optimisation of the palm oil extraction operations. Since melting of oil globule was observed to have commenced at sterilisation time as low as 30 min and that this was enhanced by increase in digestion time, it is being suggested that small scale processors should adopt 60 min sterilisation time and digestion time of 5 min to conserve energy and preserve the quality of product. A critical look has to be taken into sterilisation time in the large scale plants since they utilize pressurized sterilizer as they may have to reduce the sterilisation time based on the current study.

KEYWORDS: *Palm fruit; Microstructure; Processing operations; Oil expression; Oil yield; Optimisation*

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