

Process Optimization of Oil Expression from Sesame Seed (*Sesamum indicum* Linn.)

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Abstract

Sesame seed (*Sesamum indicum* Linn) is a tropical economic crop with high oil yield. A study was carried out to establish the degree of influence of moisture content, duration and temperature of roasting on oil expression from this crop using an oil expeller. Effects of these parameters were used to develop model equations, optimize oil yield and quality. 4 levels each of moisture content, roasting duration and temperature were used for the experiment, giving a total of 64 samples. Expressed oil was recorded as yield while free fatty acid, oil impurity and color were the criteria used in determining oil quality. Data were analyzed, employing multiple regression technique to generate mathematical models. Oil yield was maximized while oil free fatty acid; color and impurities were kept at acceptable levels. Mean oil yield, free fatty acid, impurity and color were 34.78 %, 2.57 %, 0.22 % and 6.7 respectively. The optimum moisture content, roasting duration and roasting temperature were 4.6 % wet basis (wb), 13.0 min. and 124.2 o C. These combinations gave 50.4 % oil yield, 1.1 % free fatty acid, 0.1 % oil impurity and 6.2 LUY. Error in prediction is not significance at $P > 0.05$. Expression of sesame seed at the obtained optimum parameters guarantees high yield and good quality virgin oil.