



Towards an Alternative Extraction Process for Linseed Oil

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Mots-clés	expression [4], high voltage electrical discharge [5], linseed [6], mucilage [7], size reduction [8]
Résumé en anglais	<p>Industrial linseed oil is obtained after crushing, cooking, expression and solvent extraction. Our objective was to develop an extraction process in which solvent use was excluded or minimized. In addition to that, in order to preserve the functionalities of cake proteins, a maximum temperature of 50°C was imposed throughout the process. As these two restrictive conditions decrease dramatically the oil yield, enzymatic and electric treatments were considered. Oil yields similar to those obtained by expression at 100°C were achieved by optimizing the crushing conditions. Alternatively, with expression, a high-efficiency enzymatic treatment was tested on crushed and humidified seeds. By this enzymatic liquefaction, an extremely stable emulsion was produced due to the mucilage present in the seeds, which is a good natural emulsifier. In order to separate oil from water, it is necessary to eliminate the mucilage before the enzymatic treatment. Two methods of aqueous extraction were tested: one at 34°C under agitation and the other enhanced by high voltage electrical discharges. The second process proved to be of greater efficiency. To sum up, the new process comprises the following stages: crushing, expression, demucilagination by electric discharges, centrifugal separation of mucilage and solid residue, enzymatic or electric treatment of this residue and final separation of oil, water and solid fractions.</p>
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