B-52 : FREE FATTY ACID DEVELOPMENT IN SESAME DURING MECHANICAL EXPULSION OF OIL

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Mechanically expelled sesame oil contains free fatty acid (FFA) content above 3% making it unsuitable for human consumption. Oil expelled repeatedly up to 4 hr. in a Rosedown Screw press on an industrial scale, was examined for FFA content. In industry, the seeds are pretreated by passing steam at 100°C or heating in a drum at 90± 2°C for 1 hr.

Both treatments increased the FFA content in oil to 4% compared to 3% in untreated oil. The heat treatments increased the temperature of the sesame seed only up to 60°C enhancing the enzymic activity in the seeds. The conventional heat treatments are not effective in inactivating lipases.

Soaking the sesame seeds in 3% caustic soda solution for 1 hr. prevented lypolysis during extraction in a Rosedown screw press. The oil developed a FFA of only 0.8%. The oil yield dropped to only 38% compared to 40% observed with heat treatment. Decortication of seeds prior to oil expulsion yielded oil with less than 2% FFA. Oil expelled after decortication or soaking in caustic soda was less acceptable to the consumer as it lacked reddish yellow colour. Sesame oil was alkali refined on a laboratory scale and separated using a separating funnel and filtered. Alkali refining reduced FFA to 0.4%, but caused 20-35% loss of oil yield resulting in economic losses.

Application of superheated steam for rapid inactivation of the enzymes is suggested.