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(P2.23) Peanut oil screw press extraction from seeds with and without tegument.

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The peanut (*Arachis hypogaea* L.) belongs to the botanical family of legumes. The nut contains high oil content (45 - 50% b.s.). The objective of this work was to optimize the extraction of peanut oil from seeds with and without tegument using mechanical pressing and to evaluate the chemical quality of the obtained oils. To carry out the extractions, a screw press was used (model CA 59 G, Komet brand, IBG Monforts, Germany). A complete multi-factor design was used to analyze the influence of the following process parameters: seed moisture content (SMC, 6 - 12%, bh), pressing temperature (PT, 50 - 90 ° C), pressing speed (PS, 20 - 40 rpm) and restriction die (RD, 5 - 6 mm). The response variables studied were: extraction yield and oil chemical quality (peroxide and acid values, oxidative stability and UV specific extinction coefficients). The optimization was carried out using the Statistics program. The extraction for each raw material was optimized: runner type peanuts with and without tegument. The maximum extraction yield was achieved by using peanut seed with tegument (82% of the total available oil) with a SMC of 9 %, PT of 90 ° C, RD of 5 mm and PS of 20 rpm. For peanut seed without tegument the maximum yield (76.4% of the total available oil) was obtained with a SMC of 9%, PT of 50 ° C, RD of 5 mm and SP of 20 rpm. Both models presented a good fit to the experimental data. The oils presented good quality according to the ranges suggested by CODEX for crude oils obtained by pressing. No significant differences were observed comparing tocopherols, carotenoids and chlorophylls contents among peanut oils with and without tegument and a commercial crude oil. The results suggest that it would be possible to adjust the industrial extraction processes using groundnut with tegument as a strategy to reduce energy consumption, obtaining a product with similar quality and extraction yields.

Key words: Chemical quality, Extraction, Optimization, Peanut oil, Tegument