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Chemical changes of oils and meals obtained from commercial hybrids of sunflower grains

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Storage of raw materials must be done properly preventing compositional changes. Sunflower seeds are grown year-round in Brazil and studies evaluating different genotypes and changing characteristics during storage are scarce. This study aim was to evaluate chemical changes in oils and meals obtained from commercial hybrids during storage under two conditions: AMB-25°C/75% relative humidity (RH) for 301 days; CO-with cyclical variations calculated for 181 days resulting in an average of 24°C/68% (RH).

Genotypes OL5, He 250 and He 253 (with different contents of oleic acid) underwent mechanical pressing producing oil and meal. Oils were stored in polyethylene terephthalate bottles. In half of them, nitrogen was bubbled, simulating an inert atmosphere. Meals were placed in laminated raffia and polyester/polyethylene bags (PET/PE). Quality changes of the oils were monitored by peroxide value, acidity, oxidative stability, fatty acid composition and tocopherols. Meals were monitored by moisture and peroxide value of their lipid fraction. OL5 oil showed lower peroxide levels, followed by He 253 and He 250 samples. The acidity varied as follows: OL5 >He 253 >He 250. Oxidative stability was higher for the OL5 oil (68.4h). Fatty acid composition and tocopherols showed no alterations for the oils. OL5 meal packed in PET/PE bags showed 8% of moisture after 250 days, in laminated raffia was higher. He 250 and He 253 meals showed similar values of moisture, except for AMB condition in laminated raffia. Peroxide values were 1meq/kg (OL5 meal), 7meq/kg (He 250) and 9meq/kg (He 253). Results showed that the initial composition of genotypes of sunflower grains was decisive on the variation in the quality of their by-products. Oils with higher oleic acid were more stable to oxidation and can be used for refining and biofuels production. Meals presented moisture variation and oxidative degradation. Laminated raffia was the recommended package for this product.

Keywords: Sunflower seed, Storage, Sunflower seed oil and meal, Quality control