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Saturated, unsaturated, trans-fatty acids and total oil quality indicators of oils obtained from less salty black table olives preserved with vacuum, map and gamma irradiation technologies

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In this study, the effect of preservation methods on shelf life and quality of two type natural black table olives processed low salty (4-2%) as natural black olives in brine and natural black rounded olives by using different methods (natural black olives in brine and rounded olives) was performed. For this purpose, samples of Gemlik variety olives were harvested from the orchards of Olive Research Institute located in Bornova and Kemalpaşa. Olives were processed two kinds of methods including packaged with vacuum and modified atmosphere (N2 60% and CO2 40%) packaging and applied gamma irradiation (0, 1, 3, 5 kGy), then olives storage in the ambient conditions for 8 months. The oils from less salty black table olives preserved with vacuum, MAP and Gamma Irradiation was obtained. During storage of table olives, free fatty acids (FFA), peroxide values (PV), saturated, unsaturated and trans-fatty acids were determined. It was detected that FFA, peroxide values were increased because of the fermentation in the experimental duration and for whole storage duration but these increasing was less than the experimental duration. FFA changed in rounded olives from 0.25% to 12.76% while in natural black olives in brine from 0.25% to 9.54%. The peroxide value altered from 4.66% to 14.94% and from 4.66% to 16.25% in rounded olives and in natural black olives in brine, respectively (n=6) ($p<0.05$). The unsaturated fatty acids were not affected by applied technologies including vacuum, MAP and Gamma Irradiation as statistically ($p<0.05$).Total saturated fatty acids decreased during storage (palmitic and stearic acids in rounded olives from 13.92% to 12.60%; 3.06% to 2.74%, respectively and natural black olives in brine from 13.92% to 12.17%; from 3.06% to 2.96%) (n=6 $p<0.05$). Trans-fatty acids (TYA) were not affected and slightly changed apart from one group including oils obtained from 2% salt rounded table olives (0.07% to 0.53%). In this context, it is determined that the best preservation was performed by modified atmosphere packaging (MAP) technology. Applied gamma irradiation dose was found as determinative factor for oil trans-fatty acid content and is statistically important (n=6 $p<0.05$).

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