Effect of different kinds of packaging on quality of some food stuffs

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The present investigation was carried to study the effect of different packaging materials on quality of some food stuffs through storage period for one year under ambient temperature(22-30 °C). The food stuffs that carried out to study of investigation were hot tomato sauces, semi hot tomato sauces, chilli tomato sauces, fig jam and olive oil and packaging materials were glass jar, transparent glass bottles, brown glass bottles, polyamide burchans, high density polyethylene bottles and aluminum tubes.Hot tomato sauce, semi hot tomato sauce and chilli tomato sauce were packed in glass jars and aluminum tubes and fig jam was packed in glass jars, polyamide burchans and aluminum tubes and were pasteurized and olive oil was packed in transparent glass bottles and brown glass bottles and high density polyethylene bottles and were stored at ambient temperature for 12 months. The obtained results could be summarized in the following : 1- Fresh tomato juice and tomato sauces : Fresh Tomato juice:The chemical constituents of fresh tomato juice were 6.15 %, 5.3%, 2.43 %, 3.76%, 0.43% 3.9 and 0.323 % for total solids, total soluble solids, reducing sugars, total sugars, total acidity (as citric acid), pH value and ash content respectively.tomato sauce:The chemical constituents of chilli tomato sauces were 27.35%, 22.1%, 3.26%, 16.28%, 1.84%, 3.40, 3.753%, 640 ppb, 230 ppb and 2.13 ppb for total solids, total soluble solids,'reducing sugars, total sugars, total acidity (as citric acid), pH value, ash content, lead content, aluminum content and zinc content, respectively and semi hot tomato sauces were 27.92%, 22.30%, 30.23%, 16.37%, 1.87%, 3.30, 3.327%, 470 ppb, 210 ppb and 216 ppb for total solids, total soluble solids, reducing sugars, total sugars, total acidity (as citric acid), pH value, ash content, lead content, aluminum content and zinc content, respectively and hot tomato sauces were 28.35%, 22.60%, 13.18%, 16.51%, 1.82%, 3.50, 2.981%, 493 ppb, 215 ppb and 220 ppb for total solids, total soluble solids, reducing sugars, total sugars, total acidity (as citric acid), pH value, ash content, lead content, aluminum content and zinc content, respectively and after storage period for 12 months the result could be summarized in the following:1-The total solids were few increasing in all different containers in all treatments and higher increase was found (0.51%) in aluminum tubes in hot tomato sauces after 9 months.2-The total soluble solids of all investigated treatments was tended to increased in all different containers during storage period.3-The total sugars were few decreased in all different containers in all treatments during storage period.4-The reducing sugars of all investigated treatments and the higher increasing was found in (9.10%) semi hot tomato sauce in all different containers during storage period.5-The acidity was gradually increasing in all different containers in all treatments and higher increase was found 0.12% of glass jar and 0.14% of aluminum tubes in semi hot tomato sauce during storage period.6-Browning color was increasing in all different containers in alltreatments and higher increase was found 15.31% of glassjar and 16.51% of aluminum tubes in hot tomato sauce during storage period.7-Aluminum content was content increased and higher increase was found 13.75% in aluminum tubes in total hot tomato sauce during storage for 12 months. 8-The total count of bacteria was decreased during storage and mold and yeast was found less than 10 cells /g of tomato sauces in beginning of storage whereas, the different containers were free from of mold and yeast at the end of storage period.9-Statistical analysis of organolyptic evaluation data indicated that there are a significant difference ($P < 0.05$) between means values (color, odor, taste and over all acceptability) in all treatments. On the other

hand, there are a significant difference (P < 0.05) between containers glass jar and aluminum tubes in all treatments in means of color, odor and over all acceptability values during storage period. 2- 2-Fresh fig and fig jam:Fresh fig : The chemical constituents of fresh fig were 78.7%, 19.8%, 8.6 %, 17.1 %, 0.31 %, 4.6 and 0.113 % for moisture content, total soluble solids, reducing sugars, total sugars, total acidity (as citric acid) pH value and ash content, respectively.•Fig jam:The chemical constituents of fresh fig were 28.40%, 68.20, 56.80% 62.90%, 2.52%, 4.20, 0.267%, 166 ppb, 94 ppband 202 ppb for moisture content, total soluble solids, reducing sugars, total sugars, total acidity (as citric acid) pH value and ash content, lead content, aluminum content and zinc content, respectively and after storage period for 12 months the result could be summarized in the following:1.The moisture content was tended to decrease in all different containers and higher decrease was found 0.45% in polyamide burchans and 0.49% in aluminum tubes containers during storage period. 2.The total soluble solids content was increased in all different containers during storage period. 3.The reducing sugars content was increased in all different containers during storage period.4.The total sugars was slight decreased and higher decrease was found in aluminum tubes containers during storage period. 5.Browning color was increased in all different containers during storage period. 6.The acidity was gradually increased in all different containers during storage period.7.Aluminum content was increase and higher increase was found 19.15% in aluminum tubes during storage period.8.The total count of bacteria was found less than 10 cells / g of fig jam in beginning of storage and was increased to less than 30 cells/g of fig jam in glass jars and aluminum tubes and to less than 20 cells/ g in fig jam in polyamide burchans whereas, mold and yeast were 1 cell and reached from 1 to 2 cells/g on glass jars and aluminum tubes and reached to 0 cell in polyamide burchans at the end of storage period.9. Statistical analysis of organolyptic evaluation dataindicated that there are a significant difference (P < 0.05) between glass jar and both aluminum tubes and polyamide burchans in means of color, odor and taste values during storage period.3 - 3-Olive oil : The chemical and physical properties of olive oil were 0.5%, 5.6 meq/kg oil, 84.6, 188.2, 0.99% for free fatty acid (as oleic acid), peroxide value, iodine value, Saponification value and unsaponifiable matter respectively.1.Free fatty acids (% as oleic acid) increased with the progression of storage period. The lowest minimum increment of free fatty acids content was found 0.22% in case of oil packed in brown glass bottles, whereas, the highest increase in free fatty acids was found 0.3 8% with the oil packed in high density polyethylene (HDPE) bottles, after 12 months of storage. 2.peroxide value of olive oil increased with increasing the storage period. The lowest increase in proxide value was obtained 5.7 meq/kg oil with the oil packed in brown glass bottles whereas, the highest increase in peroxide value was found 17.2 meq/kg oil with the oil packed in high density polyethylene (HDPE) bottles after 12 months of storage . 3.Iodine value of olive oil decreased with increasing the storage period. The lowest decrease in iodine period. The lowest decrease in iodine value was obtained 0.40 with the oil values in brown glass bottles, whereas, the highest decrease in iodine value was found 1.10 with the oil packed in high density polyethylene (HDPE) bottles after 12 months of storage 4. Saponification value in olive oil increased with increasing the storage period. The lowest increase in saponification value was obtained 2.0 with the oil packed in brown glass bottles, whereas, the highest increase in saponification value was found 7.3 with the oil packed in high density polyethylene (HDPE) bottles density polyethylene (HDPE) bottles after one year.5 Unsaponifiable matter in olive oil decreased with increasing the storage period. The lowest decrease unsaponifiable matter was obtained 0.14% with the oil packed in brown glass bottles, whereas, the highest decrease in unsaponifiable matter was found 0.24% with the oil packed in high density polyethylene (HDPE) bottles after one year.Finally, it can be concluded that the packaging of tomato sauces, fig jam and olive oil in glass containers gave better results than packaging in plastic and aluminum tubes containers.