World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:16, No:09, 2022

Characterization of Extra Virgin Olive Oil from Olive Cultivars Grown in Pothwar, Pakistan

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Abstract : The plant olive (Olea europaea L.) is known for its commercial significance due to nutritional and health benefits. Pakistan is ranked 4th among countries who import olive oil whereas, 70% of edible oil is imported to fulfil the needs of the country. There exists great potential for Olea europaea cultivation in Pakistan. The popularity and cultivation of olive fruit has increased in recent past due to its high socio-economic and health significance. There exist almost negligible data on the chemical composition of extra virgin olive oil extracted from cultivars grown in Pothwar, an area with arid climate conducive for growth of olive trees. Keeping in view these factors a study has been conducted to characterize the olive oil extracted from olive cultivars collected from Pothwar regions of Pakistan for their nutritional potential and value addition. Ten olive cultivars (Gemlik, Coratina, Sevillano, Manzanilla, Leccino, Koroneiki, Frantoio, Arbiquina, Earlik and Ottobratica) were collected from Barani Agriculture Research Institute, Chakwal. Extra Virgin Olive Oil (EVOO) was extracted by cold pressing and centrifuging of olive fruits. The highest amount of oil was yielded in Coratina (23.9%) followed by Frantoio (23.7%), Koroneiki (22.8%), Sevillano (22%), Ottobratica (22%), Leccino (20.5%), Arbiquina (19.2%), Manzanilla (17.2%), Earlik (14.4%) and Gemllik (13.1%). The extracted virgin olive oil was studied for various physico- chemical properties and fatty acid profile. The Physical and chemical properties i.e., characteristic odor and taste, light yellow color with no foreign matter, insoluble impurities (≤0.08), fee fatty acid (0.1 to 0.8), acidity (0.5 to 1.6 mg/g acid), peroxide value (1.5 to 5.2 meqO2/kg), Iodine value (82 to 90), saponification value (186 to 192 mg/g) and unsaponifiable matter (4 to 8g/kg), ultraviolet spectrophotometric analysis (k232 and k270), showed values in the acceptable range, established by PSQCA and IOOC set for extra virgin olive oil. Olive oil was analyzed by Near Infra-Red spectrophotometry (NIR) for fatty acids sin olive oils which were found as: palmitic, palmitoleic, stearic, oleic, linoleic and alpha-linolenic. Major fatty acid was Oleic acid in the highest percentage ranging from (55 to 66.1%), followed by linoleic (10.4 to 20.4%), palmitic (13.8 to 19.5%), stearic (3.9 to 4.4%), palmitoleic (0.3 to 1.7%) and alpha-linolenic (0.9 to 1.7%). The results were significant with differences in parameters analyzed for all ten cultivars which confirm that genetic factors are important contributors in the physico-chemical characteristics of oil. The olive oil showed superior physical and chemical properties and recommended as one of the healthiest forms of edible oil. This study will help consumers to be more aware of and make better choices of healthy oils available locally thus contributing towards their better health.

Keywords : characterization, extra virgin olive oil, oil yield, fatty acids
Conference Title : ICFSPN 2022 : International Conference on Food Science and Probiotic Nutrition
Conference Location : Dubai, United Arab Emirates
Conference Dates : September 27-28, 2022