



2nd SCIENTIFIC CONFERENCE

**FOR CRITICAL ENVIRONMENTAL ISSUES OF
THE WESTERN BALKAN COUNTRIES**

BOOK OF ABSTRACTS

October 28th to 30th, 2021, Faculty of Agriculture, Goce Delčev University, Štip,
Republic of North Macedonia



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Republic of North Macedonia

WBAA-Western Balkan Alumni Association

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Abstract

Edible oils obtained from plants and oilseeds represent ester mixtures derived from glycerol with chain of fatty acids. Cold-pressed sunflower oils are rich in oleic and linolenic fatty acids. Oleic acid is monounsaturated fatty acid less susceptible to undesirable changes during deep-frying in comparison to polyunsaturated fatty acids.

The main object of this study was determination of physicochemical parameters such free fatty acids, peroxide value, saponification value, iodine number, density, oxidative stability and fatty acid composition on cold-pressed oils from 17 newly cultivated hybrids from sunflower from the region of North Macedonia. Results from fatty acid methyl esters indicated Experto hybrid as the high oleic sunflower hybrid with 86.2% of oleic acid. Moreover, iodine number for sunflower oil from this hybrid was 87.5 g I₂ per 100 g oil, which was expected due to the high level of monosaturated fatty acid. Negative correlation confirmed inverse relationship between the amounts of oleic acid and values of iodine number ($r=-0.896$). Opposite, positive correlation between iodine number and amount of linoleic acid ($r=0.892$) means that sunflower oils with higher value of iodine number will be thermally unstable and not suitable for deep-frying. Furthermore, the highest value for oxidative stability was measured for cold-pressed sunflower oils obtained from Talento, BG Fil and “Dijamantis hybrids (over 8, 9 and 5 h, respectively). According to the results from our study, we recommended the gap of oleic/linoleic acid as the most important for determination of thermal stability of sunflower oils. Finally, physicochemical parameters iodine number and oxidation stability can be significant parameters for prediction of the dominance of fatty acids in sunflower oil.

Keywords: cold-pressed sunflower oils, 17 hybrids, free fatty acids, fatty acid composition, iodine number, saponification value, refractive index, oxidative stability.