

Low A, B – Unsaturated Carbonyl Compounds as a Food Risk Factor in Thermal Processing of Grapeseed Oil

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Abstract. *Low α,β – unsaturated carbonyl compounds (LUCC) (2-propenal, crotonaldehyde) and other similar structures highly reactive organic chemicals is ubiquitously present in (cooked) foods and in the environment. Chemical reactions responsible for release of acrolein (ACR) include heat-induced dehydration of glycerol, retro-aldol cleavage of dehydrated carbohydrates, lipid peroxidation of polyunsaturated fatty acids, and Strecker degradation of methionine and threonine. Thermal processing (managing or aggressive **non-monitored**) of **grapeseeds oil** can become a food-risk factor.*

Keywords: α , β -unsaturated carbonyl compounds, acrolein, crotonaldehyde, combustion of biodiesel, Maillard reactions, grapeseed oil.

INTRODUCTION: Maximum permissible concentration (*MPC*), is determined according to European norms of labor protection, at $0.5\text{mg ACR}/\text{m}^3$ air, and the average concentration at $0.3\text{mg ACR}/\text{m}^3$. In *Rusia*, *MPC* is set at $0.7\text{mg ACR}/\text{m}^3$ air, in *Germany* and *SUA* at $0.25\text{mg ACR}/\text{m}^3$ air.

MATERIALS AND METHODS: Materials: grapeseed oil crop (2009).

RESULTS AND DISCUSSION: In paper we monitor the qualitative and quantitative colorimetric evolution of this risk factor in the gaseous phase [samples continuously harvested $0.5\text{ mL}/\text{minute}$ from evacuation devices in chips, fast-food produces, etc. manufacturing technologies) through absorption in benzidine solutions 1% in glacial acetic acid medium.

CONCLUSIONS: The proposed method for identifying trace amounts of *LUCC* as acrolein as a food chemical risk factor in thermal processing of grapeseed oil (conventional range) is reproducible ($\pm 1\%$), rapid and can be adapted a continuous control by flow various capacity (high average).

REFERENCES

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