

Abstract

# Polycyclic Aromatic Hydrocarbons (PAHs) in Grilled Marshmallows †

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**Introduction.** Grilling more and more sophisticated dishes is a popular activity. Marshmallows are confectionery products, popular among children and teenagers all over the world, available in many well-known supermarkets ready to be grilled. Grilled marshmallows can be a source of exposure to harmful compounds, including carcinogenic polycyclic aromatic hydrocarbons (PAHs).

**Method.** The procedure of PAHs formed in marshmallows grilled under different conditions includes the dilution stage with deionized water and liquid–liquid extraction with cyclohexane and solid-phase extraction (SPE on silica gel columns). PAH fractions were initially analyzed via planar chromatography (HPTLC) using densitometry, and PAH concentrations were determined via GC-MS/MS using the selective reaction monitoring (SRM) mode. The authors' designed survey, in relation to the consumption of grilled marshmallows, was also conducted among approximately 300 children and adolescents.

**Results.** Preliminary results of TLC and GC-MS/MS analysis indicate that “raw” marshmallows do not contain PAHs. However, obtained data suggest a high exposure of young people to carcinogenic PAHs from grilled marshmallows. Carcinogenic BaP was determined in all investigated samples, constituting 36% of total PAH4 content, on average.

**Conclusions.** The profile of PAH concentrations in extracts isolated from grilled various types of marshmallows was very similar ( $R > 0.8$ ), regardless of the grilling method. The higher concentrations of PAHs were determined in multicolour marshmallows than in white ones. The lack of social awareness in relation to the exposure to carcinogenic substances is frightening.

**Supplementary Materials:** The presentation materials can be downloaded at: <https://www.mdpi.com/article/10.3390/2024100014/s1>.

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