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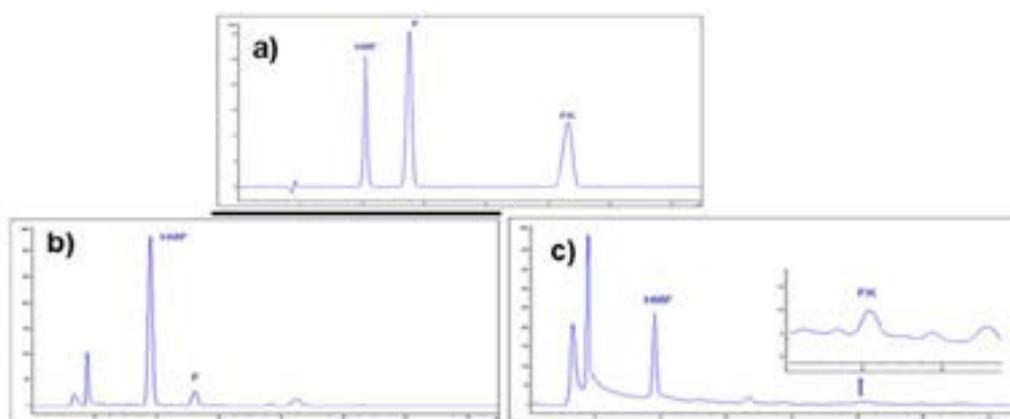
### Comparative investigation of sugar composition, furfural derivatives and mutagenicity of molasses produced by conventional and modern techniques

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**Statement of the Problem:** Molasses as a traditional food is mainly produced in two ways according to the conventional and modern methods. Technically, boiling of grape fruits under vacuum (decreasing boiling point) in modern method is the main difference from traditional one. A drop in boiling point may prevent to decompose chemical components during the production process of molasses. During boiling, the pentose and hexose compounds in the fruits are converted into furan derivatives such as furfural (F), hydroxymethyl furfural (HMF) and furyl methyl ketone (FK). Studies have revealed mutagenic and genotoxic effects of furfural and its derivatives. In this study, traditionally produced molasses from Çanakkale, Malatya and Nevşehir provinces in Turkey and different companies molasses products purchased from supermarkets were analyzed for their quality values.

**Methodology & Theoretical Orientation:** The HPLC method was used for determination of sugar composition and furfural derivatives of molasses. Mutagenicity was assessed using the Ames mutagenicity test with *Salmonella typhimurium* TA98 and TA100 strains with and without metabolic activation.

**Findings:** HMF content of one grape molasses from Çanakkale region (110.38 mg/kg) and one commercial one (134.81 mg/kg) were found to be above the limits established by the Turkish Codex Official Notification (75 mg/kg); also, HMF content of date (124.24 mg/kg) and apple molasses (788.63 mg/kg) were above this limit. Glucose and fructose content were found low in carbohydrates and juniper molasses samples do not contain HMF. There was no mutagenic effect in TA98 bacterial strain with or without metabolic activation. However, a slight mutagenic effect has been detected in TA100 strain with and without metabolic activation. A positive correlation was found between the amount of HMF and mutagenesis.



**Conclusion & Significance:** The authority frequently should inspect the quality parameters of molasses especially for traditional one.

#### Biography

Sinem Helvacioğlu has graduated in 2015 from Yeditepe University, Faculty of Pharmacy, Istanbul, Turkey. She is currently a PhD student in Pharmaceutical Toxicology at the Yeditepe University. She has her expertise in instrumental analysis and genotoxicity assessment.

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