

SUGAR BEET MOLASSES AS OSMOTIC SOLUTION FOR IMPROVING ANTIOXIDATIVE POTENTIAL OF HERBS

Milica Nićetin^{1*}, Lato Pezo², Biljana Lončar¹, Vladimir Filipović¹, Violeta Knežević¹, Jelena Filipović³, Danijela Šuput¹

¹Faculty of Technology, University of Novi Sad, Bulevar Cara Lazara 1, 21000 Novi Sad, Serbia

²Institute of General and Physical Chemistry, University of Beograd, Studentski trg 12/V, 11000 Beograd, Serbia

³Institute for Food Technology, University of Novi Sad, Bulevar Cara Lazara 1, 21000 Novi Sad, Serbia

*e-mail: milican85@live.com

Abstract

Nutritional and therapeutic relevance of herbs is generally known, which is most related to their high phenolic content and other bioactive compounds present. However, the bioactive components are unstable, and extremely prone to degradation and/or reaction with some factors during processing and preservation. Osmotic treatment is the one of the preservation method with potential to prevent drying damages and maintain the functional properties of food. Most studies conducted with osmotic dehydration are more focused on the process, and less on the nutritive and antioxidative profile of obtained product. This review summarizes the impact of osmotic treatment on the antioxidative potential of osmodehydrated product, with an emphasis on the molasses as osmotic medium.

Immersion of the plant material in concentrated solutions on the mild temperatures, by means of osmotic treatment, has the advantage of preserving the plants' total antioxidant activity, due to the protective effect of the surrounding osmotic solution, the limitations of oxidative exposure, and avoiding adversely consequences of temperature. The type of osmotic solution directly affects the retention of bioactive compounds and the overall antioxidant profile of the material immersed in it, mainly due to the transport of bioactive substances from the solution to the plant. According to the literature molasses is a reach source of antioxidants, which potentially can diffuse into plant tissue during osmotic treatment. Some papers have reported that carriers of antioxidant activity in molasses are primarily phenolic compounds derived from sugar beet (Ferulic acid; Synergic acid; Vanilic acid; Galic acid; p-Coumaric acid; Kaempferol; Catechin; Luteolin), anthocyanides, betaine, choline, and colored products of the Millard reactions (melanoidins), which formed during the production of sugar.

In conclusion the published data show that molasses as osmotic medium enhancing the overall antioxidant activity of herbs, making osmodehydrated material excellent ingredients for functional food formulation.

Key words: *Osmotic treatment, Herbs, Antioxidant activity, Sugar beet molasses.*