



## **Belgrade Food International Conference**

**Food, health and well being**

**Belgrade, 26<sup>th</sup> to 28<sup>th</sup> November 2012.**



## **Belgrade Food International Conference**

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## **Content:**

- 1. Session 1: Enzymes in food processing**
- 2. Session 2: Wastes and biomass valorization**
- 3. Session 3: Supplements, micronutrients and food additives**
- 4. Session 4: Food antioxidants**
- 5. Session 5: Nutrition science and bioactive compounds**
- 6. Session 6: New approaches to food analysis**
- 7. Session 7: Food allergens**
- 8. Session 8: Nutrition and immunology**
- 9. Session 9: Molecular biotechnology for the benefit of consumers**
- 10. Session 10: New functional foods**
- 11. Session 11: Health effects of food**
- 12. List of poster presentations**

## P 2.20. Fructan from *Bacillus sp.* NS032 - preparation, characterization and antioxidant activities *in vitro*

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Microbial polysaccharides (MPS) are characterized by high structural diversity leading to their numerous applications. The economic significance of these polysaccharides is reflected in the fact that some of these polymers are now widely accepted products of biotechnology with applications in various fields: food industry, cosmetics, agriculture, pharmacy and medicine.

In recent years, much attention was given to bacterial exopolysaccharide levan, due to specific physical and chemical properties and non-toxicity, for which it could be applied as a stabilizer, emulsifier, flavor and fragrance carrier, prebiotic, antioxidant and antitumor agent, for encapsulation, etc [1].

The aim of this work was to study the structural characteristics of a exopolysaccharide produced by *Bacillus sp.* NS032, identified as *B. licheniformis* [2]. The synthesized MPS was characterized by chemical methods, planar chromatography, elemental analysis, FTIR and NMR spectroscopy. Apart from that, the antioxidant activities *in vitro* of this polysaccharide were investigated.

Based on the results the main structural characteristic of this polymer was proposed. It was concluded that the polysaccharide produced by the *B. licheniformis* strain is homopolymer fructan having backbone of D-fructofuranose units connected by  $\beta$ -(2,6)-glycosidic linkages. The side groups were fructose residues linked to the main chain likely through  $\beta$ -(2,1)-glycosidic linkages. The results showed that investigated MPS belongs to levan-type polysaccharide. The antioxidant activities (chelating ability, reducing power) *in vitro* showed moderate values compared to the commercial antioxidants.

