Tannins encapsulation for personalized products application

Alexandru Vasile Rusu¹, Ann-Kristin Schwarze¹, Malte Bethke², Berta Alvarez Penedo¹ and Monica Trif³,*

¹ Biozoon Food Innovations GmbH, 27572 Bremerhaven, Germany;
² Department of Process Technology, Centiv GmbH, 28857 Syke, Germany;
³ Department of Food Research, Centiv GmbH, 28857 Syke, Germany

* Correspondence: rusu@biozoon.de; mt@centiv.de

Abstract: Tannins are secondary metabolites of plants, polymers consisting mainly of glycosides, found in nature as hydrolysable tannins or condensed tannins, as well as a combination of them. In the European H2020 funded Stance4Health project, one of the objective is to develop special tannin extracts (from chestnut wood, quebracho wood, oak wood, tara pods, chinese gallnuts) with differential effects on the gut microbiota and human health, aiming for a personalised modulation of gut microbiota activity at the individual level.

Keywords: tannins; personalization; supplement; athletes; elderly

1. Introduction

Stance4Health EU Project addresses topic DT-SFS-14-2018: Personalised Nutrition, belonging to the Work Programme 2018-2020 of “Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy”. The specific challenge of this topic is to tackle some of society’s grand challenges like the development of new, secure and healthier foods while fighting against 21st century NCDs [1-3].

One of the objective is to develop special tannin extracts (from chestnut wood, quebracho wood, oak wood, tara pods, chinese gallnuts) with differential effects on the gut microbiota and human health, aiming for a personalised modulation of gut microbiota activity at the individual level [3,4].

2. Materials and Methods

The tannins (from chestnut wood, quebracho wood, oak wood, tara pods, chinese gallnuts) will be extracted by means of water, ethanol or water-ethanol mixtures at different ratios [5,6].

Due to their astringency and bitter flavor, will be define how the bitterness can be modify by coating the bitter-tasting tannins extracted using alginate or gum-like or combination of maltodextrin-gum Arabic (ratio of 40:60 (w/w)) formulas to form double-phase emulsion micro-encapsulation or using the spray-dry method to obtain HPMC particles with tannins[7].

3. Results and Discussions

The final product targeted is a powder form that can be easily re-dispersed in water for personalization at individual level [8-13].

Besides, it is well-known their antioxidant, antimicrobial (increase the shelf-life of foods) and antibacterial (inhibitor to foodborne bacteria) effects, and therefore their application as food enhancements and food preservatives it is of high importance due to their protective nature.

5. Conclusions
Novel dietary supplements enriched with different tannin extracts in order to exert novel biological activities, will be produced in an individualised manner, being the entry step in the European Food Sector for personalised nutrition.

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References


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