EuroSciCon

2nd EuroSciCon Conference on

Food Technology

May 14-16, 2018
Rome, Italy

M V Ghica et al., J Food Nutr Popul Health 2018, Volume: 2
DOI: 10.21767/2577-0586-C1-003

# A STATISTICAL APPROACH TO INVESTIGATE THE EFFECTS OF BIOTECHNOLOGICAL PARAMETERS ON THE OBTAINING AND PROCESSING OF BREWING YEAST BIOMASS

**M V Ghica[1], M G Albu Kaya[2], M Begea[3], R I Teodorescu[4], Lacramioara Popa[1], C E Dinu Pirvu[1], A I Ciric[3], S I Marinescu[5], V Tudor[4], R N Negrila[6] and I D Barbulescu[5]**

[1]"Carol Davila" University of Medicine and Pharmacy, Romania
[2]The National Research & Development Institute for Textiles and Leather, Romania
[3]University Politehnica of Bucharest, Romania
[4]University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania
[5]Pharmacorp Innovation SRL, Romania
[6]Agsira SRL, Dolj, Romania

**Extensive studies related to the introduction of yeast products, yeast-derivatives and yeast-containing ingredients in animal feeds were conducted. Thus, yeasts are nowadays used as alternative supplements in animal feeds due to their important nutritional value consisting in an appreciable content in proteins, amino acids, nucleic acids, vitamins (especially B-complex vitamins) and minerals. Brewing yeast biomass, one of the main product resulted from brewing industry, proved benefits for ruminants showing its potential in improving animal growth performance and health. Brewing yeast products are used in dried or wet forms. Wet yeasts may cause some issues (short preservation time, high contamination risks, and large shipping and storage costs), therefore, one of the most used yeast biomass preservation technique is the lyophilisation was used. The major lyophilisation advantage consists in product properties recovery after rehydration. In this study we targeted the modelling and optimization at pilot level of yeast biomass obtaining process through a fermentation mediated by yeast strain *Saccharomyces pastorianus spp. carlsbergensis* W34/70. The biotechnological parameters monitored, designed according to a Taguchi fractional experimental plan with four factors at three levels, were: temperature, pH, carbon source and nitrogen source. The following system responses were set as dependent variables: yeast biomass amount in wet form (g/L), yeast biomass amount in dried form obtained by lyophilisation (g/L), yeast viability quantified through colony forming units (CFU) per gram, dried yeast biomass wettability quantified though contact angle, protein content (%) and dry matter content (%). The response surface methodology allowed the visualization of the cultivation conditions effects on responses in the tridimensional space. Taguchi approach was further used to select the combination of biotechnological parameters that ensure the process of quality and robustness. This modern statistical approach could be applied for optimization on industrial scale of the fermentation process to obtain brewing yeast biomass, with potential use in ruminant nutrition.**

## Biography

M V Ghica is Professor at Physical and Colloidal Chemistry Department, Faculty of Pharmacy, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania. She has graduated at Faculty of Pharmacy (2000), holds a PhD in Pharmacy (2008) and a Master's degree at Faculty of Chemistry, University of Bucharest (2004). Her main research focus is on: (i) drug delivery systems design and development; (ii) use of experimental statistic design techniques combined with response surface methodology and Taguchi approach for the optimization of pharmaceutical systems formulation and technological processes. Her scientific activity was materialized in: 13 books, 2 book chapters, 81 articles (46 ISI), 148 studies presented at scientific meetings, 1 patent and 3 patent applications, and 15 awards. She was Project Manager for 2 national research projects, as well as partner responsible for 3 research projects (2 international/1 national). She was also a member of some scientific committees and experienced reviewer for various journals.

mihaelaghica@yahoo.com
mihaela.ghica@umfcd.ro