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BIO-P-022 POTENTIAL OF GOLD NANOPARTICLES FUNCTIONALIZED OR NOT WITH CARBOSILANE DENDRIMERS IN PROTEIN SAMPLE PREPARATION

Maria Luisa Marina; Romy Vásquez-Villanueva; Cornelia Peña; Francisco Javier de la Mata; Rafael Gómez; María Luisa Marina; María Concepción García

BIO-P-023 OPTIMIZATION OF ULTRASOUND ASSISTED EXTRACTION OF ERGOSTEROL FROM AGARICUS BISPORUS L.

Sandrina A. Heleno; Patrícia Diz; Lillian Barros; Luís Pais; Alírio Rodrigues; Maria Filomena Barreiro; Isabel C.F.R. Ferreira

BIO-P-024 EVALUATION OF BIOACTIVE COMPOSITION AND BIOLOGICAL EFFECT OF MINT EXTRACT ON HUMAN LARYNX AND LUNG CARCINOMA CELL LINES

Arijana Bušić; Draženka Komes; Ksenija Durgo; Marina Lisičar; Ana Belščak-Cvitanović; Aleksandra Vojvodić

OPTIMIZATION OF ULTRASOUND ASSISTED EXTRACTION OF ERGOSTEROL FROM AGARICUS BISPORUS L.

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Mushrooms are appreciated worldwide, not only for their nutritional value and exquisite flavor and texture, but also for their medicinal properties. There is scientific evidence demonstrating the benefits of mushrooms ingestion due to their richness in bioactive compounds such as mycosterols, in particular ergosterol [1]. Agaricus bisporus L. is the most consumed mushroom worldwide presenting a high content of ergosterol, which represents 90% of its sterol fraction [2]. Thus, it is an interesting matrix to obtain ergosterol, a molecule with a high commercial value. According to literature, ergosterol concentration can vary between 3 and 9 mg per g of dried mushroom. Traditional methods such as maceration and soxhlet extraction are being replaced by emerging methodologies such as ultrasound assisted extraction in order to decrease the used solvent amount, the extraction time and, of course, increasing the extraction yield [3]. In the present work, A. bisporus was extraction solvent type (hexane and ethanol), ultrasound amplitude (50%, 75% and 100%) and sonication time (5 min, 10 min and 15 min). Moreover, in order to decrease the process complexity, it was evaluated the pertinence of the saponification step. Ethanol proved to be the best solvent to extract higher levels of ergosterol (671.5 ± 0.5 mg/100 g dw, at 75% amplitude for 15 min), once hexane was only able to extract 152.2 ± 0.2 mg/100 g dw, in the same conditions. Nevertheless, the hexane extract showed higher purity (11%) when compared with the ethanol counterpart (4%). Furthermore, in the case of the ethanolic extract, the saponification step increased its purity to 21%, while for the hexane extract the purity was similar; in fact, hexane presents higher selectivity for the lipophilic compounds comparatively with ethanol. Overall, ultrasound assisted extraction proved to be an efficient technology to maximize ergosterol extraction yield, but other emerging technologies such as microwave assisted extraction can be applied with foreseen interesting results.

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References:
[1] Barreira, J.C.M., Ferreira, I.C.F.R. (2015). In Biotechnology of Bioactive Compounds: Sources and Applications, Chapter 16, First Edition. Edited by Vijai Kumar Gupta, Maria G. Tuohy, Anthonia O'Donovan, and Mobtashim Lohani, John & Wiley & Sons, Lda.
[2] Barreira, J.C.M., Oliveira, M.B.P.P., Ferreira, I.C.F.R. (2014). Food Anal. Method., 7, 217-223.
[3] Wang L., Weller C.L. (2006). Trends Food Sci Tech, 17, 300-312.