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of the South-East European Countries

BOOK OF ABSTRACTS

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Fermentation of spent espresso coffee by *Hymenobacter psychrotolerans*

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Spent coffee grounds are produced during espresso coffee preparation. This waste coffee contains significant amounts of biologically valuable ingredients such as antioxidants. The effect of fermentation by *Hymenobacter psychrotolerans* on the antioxidant activities and total polyphenol content of the spent espresso coffee extract was determined. Samples of spent espresso coffee were inoculated with selected natural strain of *Hymenobacter psychrotolerans*. The strains were cultivated on the carboxymethyl cellulose (CMC) broth and the supernatant was separated from the cells. Both supernatant and the cells suspended in saline were used for the treatment of samples. The solid state-fermentation was carried out at 30°C for five days. Solvent for extraction was water and the extracts were evaporated in the spray-dryer. The total polyphenol content was determined by the Folin-Ciocalteu method [1,2]. The antioxidant activity was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging capacity, and Ferric Reducing Antioxidant Power (FRAP) methods [2,3]. Inhibition of DPPH radicals was expressed as IC₅₀ value. Results were compared to those of non-fermented control sample. Fermentation of spent coffee with supernatant showed the increased content of polyphenols, while sample fermented with cells had the same amount of polyphenols compared to the control sample. IC₅₀ values of fermented samples were lower compared to the control sample that indicates that fermented samples had higher antioxidant activity. The IC₅₀ (µg/ml) values were 37.66, 29.00 and 18.57 for the control sample, sample treated with supernatant and fermented by cells, respectively. The FRAP assay shows that the antioxidant activity of the extract, compared to the control sample, increased only in the case of supernatant treatment, while the other extract had lower antioxidant activity. Fermentation of spent espresso coffee with *Hymenobacter psychrotolerans* have improved its antioxidative properties which present a potential for its application in pharmaceutical and food industry.

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