INTERNATIONAL CONFERENCE ON SCIENCE AND TECHNIQUE BASED ON APPLIED AND FUNDAMENTAL RESEARCH

Book of ABSTRACTS

ICoSTAF’16
2 JUNE 2016
Szeged
Hungary
OPTIMIZATION OF SUBCRITICAL WATER EXTRACTION PROCESS OF ACHILLEA MILLEFOLIUM

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Achillea millefolium belongs to the Asteraceae family. A. millefolium is frequently used in folk medicine. Numerous researches have been conducted in order to confirm its polyvalent pharmacological activities, such as: anti-inflammatory, antitumor, antioxidant, antimicrobial, hepatoprotective, gastric anti-secretory and gastroprotective activity. The objective of this study was to gain A. millefolium extracts by subcritical water and explore the influence of process parameters (temperature, extraction time and hydrochloric acid concentration) on content of total phenols, total flavonoids and antioxidant activity of obtained extracts. Spectrophotometric assays were used for determination of polyphenolics content (total phenols and total flavonoids), while antioxidant activity was evaluated by ABTS assay. Box-Behnken experimental design was used to set experiments on three levels and three variables, and response surface methodology (RSM) was used for optimization. Optimization of extraction parameters was performed in order to maximize polyphenolic compounds yield and antioxidant activity. Results were fitted to a second-order polynomial model which adequacy was evaluated by analysis of variance (ANOVA).

ISOLATION OF ENDOPHYTIC FUNGI FROM MEDICINAL PLANTS

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The endophytes are the special group of microorganisms living in mutualistic relationship with several host plants without any detectable pathological symptoms. Furthermore, it has been reported that these endophytes frequently are sources of bioactive secondary metabolites, which could help to tolerate the effects of their particular habitat and also they could take part in some resistance mechanism of the host to overcome pathogenic invasion. In our present study, fungal endophytes of some selected medicinal plants were isolated with classical microbiological approaches and their taxonomical investigations were carried out molecular methods. The polymerase chain reaction (PCR)-based identification targeted the ITS parts of their rDNA sequences. The organic solvent extracts of the ferment broth of cultured isolates showed significant inhibitory activity against the selected five bacterial and two fungal test strains. The natural products of such isolates could be potential candidates for various antimicrobial applications.

This work was connected to the project GINOP-2.3.3-15-2016-00006.