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Processing reduced the toxicity and enhanced the efficacy of Xanthii Fructus

Zhi-Ling Yu, Tao Su, Hui Guo, Chi-Yan Cheng, Xiu-Qiong Fu and **Ting Li**
Hong Kong Baptist University, Hong Kong

Although toxic, the Chinese medicinal herb Xanthii Fructus (XF, the fruit of *Xanthium sibiricum*) is commonly used to treat traditional Chinese medicine symptoms that resemble cold, sinusitis and arthritis. According to TCM theory, stir-baking (a processing method) can reduce the toxicity and enhance the efficacy of XF. We aim to examine if stir-baking can reduce the cytotoxicity and enhance the anti-inflammatory property of XF and to explore the chemical basis behind the potential changes of medicinal properties of XF caused by the processing. MTT assays showed that stir-baked XF (SBXF) was less toxic than XF in MIHA cells. Both XF and SBXF had anti-inflammatory effects as demonstrated by their abilities to reduce nitric oxide (NO) production as well as Inducible Nitric Oxide Synthase (iNOS) mRNA expression in Lipopolysaccharide (LPS)-stimulated RAW 264.7 macrophages. The anti-inflammatory effects of SBXF were more potent than that of XF. By comparing the chemical profiles, we found that 7 peaks were lower while 9 other peaks were higher in SBXF than in XF. Eleven compounds corresponding to 11 individual changed peaks were tentatively identified. These data showed that stir-baking significantly reduced the cytotoxicity and enhanced the anti-inflammatory effect of XF. With a developed UPLC/Q-TOF-MS we differentiated XF and SBXF by their chemical profiles. Further study is warranted to establish the relationship between the alteration of chemical profiles and the changes of medicinal properties of this herb caused by stir-baking.

zhyu@hkbu.edu.hk

Evaluation artemisinin production culture (*in vivo*) of the plant and callus (*Artemisia aucheri Boiss*) to light stimulus and UV rays

Zohreh Bakhtiari[1], **Gholamreza Asghari**[2], **Shekofeh Enteshari**[1] and **Ahmad Reza Rahmati**[3]
[1]Payam Noor University, Iran
[2]University of Medical Sciences, Iran
[3]Isfahan University of Medical Sciences, Iran

Introduction: Artemisinin is the most important anti-malaria medicine and its chemical synthesis is complex and costly. Due to the presence of gene manufacturer artemisinin in plant *Artemisia aucheri Boiss* and disable this gene and the abundance this plant in Iran, this experiment was designed with aim probability of producing artemisinin in cultured tissue in the presence of light stimuli.

Experiment Method: For culture, was used of solid culture, Murashing & Skoog without growth regulators. Culture medium was placed in the culture room under sterile conditions, the temperature of 2±25 and different light conditions with different treatments. Lighting conditions was used of optical radiation 1000, 2000 and 3000 lux. In addition, it was assumed, radiation treatments UV and treatment of Darkness. For analyzing data and drawing diagrams, software SPSS version 20 and Excel programs was used. During the experiment, the resulting data, the average of three replicates ±SD and results based on one-way ANOVA test, Tukey test and a significant difference with $p \leq 0.05$ were investigated. For detection of artemisinin, the dichloromethanolic extract was analyzed by TLC. Measure phenolic compounds and flavonoids were done into spectrophotometric method.

Results: Seedlings in treatments under light 1000 and 3000 lux were produced artemisinin. Meanwhile, radiation-UV both the callus and the seedlings have affected and produced artemisinin. Effects of light stimuli on the chemical plant and its morphological characteristics, too, were confirmed.

Conclusion: This study showed that increased exposure as well as the use of radiation UV, forcing *Artemisia aucheri* plant to produce artemisinin. In addition, the chemical plant and the shape of the light stimulus take effect.

donyaelina@gmail.com