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### *In Vitro* Anti-inflammatory Effect of Fractional Extracts from *Gastrodia elata Blume*

Hee-Ock Boo<sup>1\*</sup>, Hag-Hyun Kim<sup>2</sup>, Soo-Jeong Kwon<sup>3</sup>, Sun-Hee Woo<sup>3</sup>, Sang-Do Lee<sup>4</sup>, Yang-Gyu Ku<sup>5</sup>

<sup>1</sup>WELLPHYTO Co. Ltd.

<sup>2</sup>Department of Food Nutrition and Cookery, Woosong College

<sup>3</sup>Department of Crop Science, Chungbuk National University

<sup>4</sup>WEGOBIO Co. Ltd.

<sup>5</sup>Division of Horticulture Industry, Wonkwang University

#### [Introduction]

*Gastrodia elata Blume* is a traditional herbal plant, which belongs to the Orchidaceae family. The rhizomes of *Gastrodia elata Blume* have been used in traditional medicine for the treatment of headaches, dizziness, vertigo and convulsive illnesses, such as epilepsy and tetanus, and it has been used clinically as a complex prescription rather than as a single herb. Medicinal plants including *Gastrodia elata Blume* are good sources of anti-inflammatory agents. Many infectious diseases have been known to be treated with herbal extracts. The evaluation of anti-inflammatory property of the *Gastrodia elata Blume* rhizome is of great interest and importance.

#### [Materials and Methods]

The rhizome of *Gastrodia elata Blume* were freeze-dried, and then ground to a fine powder. Each sample powder was stored at -20°C for experiments. The concentrated extract was partitioned between hexane and water. The aqueous layer further fractionated with methyl chloride, ethyl acetate and butyl alcohol. Four solvent fractions (hexane, methyl chloride, ethyl acetate and butyl alcohol) were collected and concentrated using vacuum rotary evaporator. Anti-inflammatory activities were evaluated on the several inflammation-related factors such as nitric oxide (NO) and the release of proinflammatory cytokine [tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), Interleukin-6 (IL-6) and Interleukin-1 beta (IL-1 $\beta$ )] in lipopolysaccharide (LPS)-treated RAW 264.7 cells.

#### [Results and Discussions]

The all fraction extracts of *Gastrodia elata Blume* significantly inhibited LPS induced NO production in mouse macrophage cells, RAW.264.7, at 50, 100 and 200  $\mu\text{g}\cdot\text{mL}^{-1}$  concentrations. This study suggests immunosuppressive potential of *Gastrodia elata Blume* extract, and in particular, these effects are differences depending on the extraction solvent. After pretreatment with *Gastrodia elata Blume* extract, the cell supernatants were measured by ELISA after 24 hours of stimulation with LPS. The treatment results of *Gastrodia elata Blume* extract by different fractional solvent showed that the anti-inflammatory activity was most excellent in ethyl acetate fraction as a whole. The present study demonstrate improved anti-inflammatory response in a LPS-stimulated macrophage model upon treatment with extract of *Gastrodia elata Blume* via reduction of IL-6, TNF- $\alpha$  and IL-1 $\beta$  production, or reduction of expression of NO. These results indicate that *Gastrodia elata Blume* fractional extracts tested here may have potential anti-inflammatory activity, however, numerous and in-depth studies should be carried out for this purpose.

\*Corresponding author: Tel. \*\*\* - \*\*\*\* - \*\*\*\* E-mail, swboo@hanmail.net