

April 16-17, 2018  
Amsterdam, NetherlandsMin Won Lee et al., Am J Ethnomed 2018, Volume 5  
DOI: 10.21767/2348-9502-C1-006**ANTI-INFLAMMATORY EFFECTS OF PHENOLIC COMPOUNDS FROM  
QUERCUS MONGOLICA ON UVB-IRRADIATED HUMAN SKIN CELLS****Min Won Lee and Han Hyuk Kim**

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**Q**uercus mongolica (QM) is a species of Quercus native to Eastern Mongolia, Siberia, China, Japan, and Korea. Species of Quercus have been used as an oriental traditional medicine in north-east Asia for the treatment of inflammation of the oral, genital, or anal mucosa, and externally for inflammation of the skin. Previous studies on the chemical composition of Quercus species have led to the isolation of various triterpenoids, flavonoids, and phenol glucoside gallates exhibiting a variety of bioactivities including gastrointestinal disorders, anti-bacterial and anti-oxidative activities. Previously, we conducted isolation and elucidation of the structures of the known compounds from QM including one ellagitannin [pedunculagin (PC)], five flavanoids [(+)-gallocatechin, (+)-catechin, quercetin-3-O-(6"-O-galloyl)- $\beta$ -D-glucopyranoside (QGG), kaempferol-3-O- $\beta$ -D-glucopyranoside-7-O- $\alpha$ -L-rhamnopyranoside, kaempferol-3-O-(6"-galloyl)- $\beta$ -D-glucopyranoside]. In this work, we measured inhibitory activities on chemokine and cytokine production of the extracts and compounds isolated from QM. The activities of QM and its compounds against MCP-1, TARC, IL-6, IL-8, IL-10 and IL-13 in keratinocytes irradiated with UVB showed that EtOAc fraction and PC and QGG showed the best activities. Based on the inhibitory activities of cytokines and chemokines, PC and QGG were selected as candidate the treatment of chronic skin diseases and evaluated their protein and mRNA levels of inflammatory mediators including COX-2, PGE2, cytokines and chemokines in UVB irradiated HaCaT cells and also quantified by western blotting and RT-PCR. PC and QGG diminished UVB-irradiated protein level expression of COX-2 and PGE2, downstream products in dose-dependent manners. These results suggest that PC and QGG are potential anti-inflammatory for treating inflammation of skin.

**Recent Publications**

1. Thi Tam Le and Min Won Lee, et al. (2017) Anti-Inflammatory and anti-oxidative activities of phenolic compounds from *Alnus sibirica* stems fermented by *Lactobacillus plantarum* subsp. *argenteoratus*. *Molecules* 22(9):1566.

2. Sung Hye Youn, Min Won Lee, et al. (2017) Anti-Inflammatory and Anti-urolithiasis effects of polyphenolic compounds from *Quercus gilva* Blume. *Molecules* 22(7):1121.
3. Manh Heun Kim, Min Won Lee, et al. (2016) Two new phenolic compounds from the leaves of *Alnus sibirica* Fisch. ex Turcz. *Natural Product Research* 30(2):206–213.
4. Jun Yin, Min Won Lee (2016) Inhibitory activities of phenolic compounds isolated from *Adina rubella* leaves against 5 $\alpha$ -reductase associated with benign prostatic hypertrophy. *Molecules* 21(7):887.
5. Han Hyuk Kim, Min Won Lee, et al. (2015) Inhibition of matrix metalloproteinase-1 and type-I procollagen expression by phenolic compounds isolated from the leaves of *Quercus mongolica* in ultraviolet-irradiated human fibroblast cells. *Archives of Pharmacol Research* 38(1):11–7.



6<sup>th</sup> Edition of International Conference on  
**Pharmacognosy and  
Medicinal Plants****Biography**

Min Won Lee has his expertise in Pharmacognosy and Natural Product Derived Medicine. He is a Professor at the College of Pharmacy, Chung-Ang University and served as a President in the Korea Society of Pharmacognosy in 2017. He has extensive experience in working on phytochemical constituents from natural herbal medicine and finding effective compounds to treat various kinds of chronic inflammatory diseases including atopic dermatitis and benign prostatic hyperplasia. Because of these successful biological activities, the isolated compounds and extract of natural herbal medicine were registered on several patents in Korea and in US and China. Many papers using these results including effective compounds isolated from natural plants have been published in famous international journals.

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