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Synthesis of gallic acid analogues as histamine and pro-inflammatory cytokines inhibitors for treatment of mast cell-mediated allergic inflammation

Yue Yuan, Xiang Fei, Myunghoe Heo, Wei Sun, Sanha Lee and Seung-Yong Seo
Gachon University, South Korea

Allergic diseases prevalence rate has kept rising globally for more than 50 years. Sensitization to common allergens among children is approaching 50%. Allergic inflammation was classified into three phases: early-phase, late-phase and chronic allergic inflammation. Gallic acid (3, 4, 5-trihydroxybenzoic acid), a polyphenols natural product obtained from various herbs, is known to have various biological effects such as anti-oxidation, anti-inflammation and anti-cancer. In previous research, Shin and co-workers found out gallic acid inhibits mast cell-derived inflammatory allergic reactions by blocking histamine release and pro-inflammatory cytokine expression. A number of gallic acid analogues have been synthesized by modification of different functional groups on gallic acid through amide coupling and Pd/C-catalyzed hydrogenation. These compounds showed modest to high inhibitory effect on the histamine release and pro-inflammatory cytokine expression. Of these, 3c were tested in mouse model and found to be more active than natural gallic acid. Our findings suggest Gallic amides have the potential to develop into pharmacological inhibitors for treatment of allergic inflammatory diseases.

Biography

Yue Yuan has completed his Master's degree in Pharmaceutical Engineering (DDS) at Woosuk University, South Korea. Presently, he is a PhD Scholar in College of Pharmacy at Gachon University, Incheon, South Korea and working on development of anti-cancer drugs, anti-diabetes drugs and anti-diabetes complications drugs.

wonwol@gmail.com

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