

Investigation of Novel Pharmacological Action of *Arctii Fructus* and its Compound

Seung-Heon Hong

Department of Oriental Pharmacy, College of Pharmacy, Wonkwang-Oriental Medicines
Research Institute, Wonkwang University, Iksan 54538, Korea

Arctii Fructus (AF), which contains arctigenin (ARC) as a major constituent, is traditionally used as an anti-inflammatory medicine to treat inflammatory sore throat. Although several studies have proven its anti-inflammatory effects, there have been no reports on its use in inflammation related disorders such as obesity, cancer metastasis, and allergic responses. This study investigated the anti-obesity effect and anti-metastasis effect of AF and ARC. AF and ARC inhibited weight gain by reducing the mass of white adipose tissue in high fat diet (HFD)-induced obese mice. Serum cholesterol levels were also improved by AF and ARC. In *in vitro* experiments, AF and ARC decreased differentiation of white adipocytes. Furthermore, AF induced differentiation of brown adipocytes, which are able to consume surplus energy through non-shivering thermogenesis. Also, AF and ARC inhibited colon cancer and lung metastasis of colon cancer. They suppressed not only colorectal cancer cell progression by inhibiting cell growth, but also prohibited lung metastasis by regulating epithelial-mesenchymal transition (EMT), migration, and the invasion. These effects were confirmed in an experimental metastasis mouse model. In addition, AF and ARC inhibited mast cell mediated allergic responses. Collectively, our study suggests that AF and ARC might show inhibitory effects on inflammation related diseases, including obesity, cancer, cancer metastasis, and allergic responses.

Key words: *Arctii Fructus*, Arctigenin, Obesity, Cancer, Metastasis, Allergic responses