

News & Comments

Herbal Medicines Contains Maximum Capabilities of Anti-Inflammatory

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The immune system is all living species' principal defence mechanism against foreign infections and stimuli in the environment. An organism's ability to live a healthy life depends on its immunological response. In all vertebrates, the immune response is divided into two categories: innate and adaptive immune responses. The innate immune response is the most rudimentary defence system that plants and animals have evolved. DCs are mammalian immune cells that serve as essential antigen-presenting cells. Pathogen Recognition Receptors are a set of specialized receptors on host immune cells that have a role in the innate immune response (PRRs). Those receptors can interact with a variety of chemicals originating from a variety of microorganisms as well as damaged tissue that differs from the host's.

MAPKs are protein kinases that play an important role in cell growth, migration, survival, and death. An extracellular signal-regulated kinase (ERK), the family of kinases, and the c-Jun N-terminal kinases are all members of the MAPK family (JNKs). Endothelial and nerve cells secrete nitric oxide (NO), a small free radical with a short life span. It functions as a neurotransmitter at nerve junctions and influences the inflammation. *Sanguisorba officinalis* L. is a Rosaceae herbaceous plant that can be found in Asia, North America, parts of Europe, and Africa. Because of their analgesic and astringent characteristics, its dried roots have been utilized as traditional medicine in Eastern Asia since ancient times.

This study was organized at the Department of Microbiology and Immunology, College of Medicine, Jeju National University, South Korea. The Korea Institute of Oriental Medicine provided 2.4 kg of dried *S. officinalis* roots, which were solvent, extracted using 8.0 L of methanol. The methanol extract was then combined with water before being partitioned with ethyl acetate and n-butanol to produce NO15 as a metabolic end product. Following the manufacturer's directions, nitrite generation in culture supernatants is quantified using the Griess reagent kit. At a wavelength of 540 nm, the absorbance of microplates was calculated.

Statistical analysis: All experimental data are expressed as the mean of three independent experiments with a Standard Deviation (SD). To compare the comp treatment and control groups, a one-way ANOVA was utilized. Statistically, a significance of $p < 0.05$ was judged significant.

MTT assay was used to assess the effect of Comp on cell viability. A microplate reader was used to measure absorbance at 540 nm wavelength. The percentage of Comp non-treated viable cells was used to calculate cell viability (percent). Cell viability dropped to 90.22.5% at the highest concentration of



Comp (10 M). As a consequence, compared to the Comp-untreated control, indicated concentrations of Comp (0.1-10 M) have the minor effect (by 5-10 percent reduction) on cell viability. When TLR9 binds to its ligand CpG-containing DNA, it activates some downstream signalling pathways (NF-B and MAPKs), resulting in the production of cytokines and chemokine's that act as inflammatory mediators. Through western blotting, the effect of Comp on MAPK phosphorylation (ERK1/2, JNK1/2 p38) in TLR9-stimulated DCs was investigated.

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In conclusion, the current findings suggest that Comp has a suppressive effect on cytokine production, which could be linked to the activation of MAPKs and the NF-B pathway. To verify its efficacy in the treatment of inflammatory illnesses, full research of its mode of action and in vivo effect is required.

JOURNAL REFERENCE

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KEYWORDS

Herbal Medicines, anti-inflammatory properties, innate and adaptive immune response, MAPKs, *Sanguisorba officinalis* L., cytokine production

