

The Antioxidative Effects of *Smilax bona-nox* Root Extract in Lipopolysaccharide-Activated RAW 264.7 Macrophages

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Objectives: *Smilax bona-nox* is a prickly vine native to southeastern United States and its root has traditionally been utilized for its medicinal properties. Chlorogenic acid, rutin, sinapic acid, and rosmarinic acid are the main constituents of *Smilax bona-nox* root extract (SRE), which are known for their antioxidative properties. Yet, there are no studies on the properties of SRE. Therefore, there is a need to first determine whether SRE has antioxidative properties in lipopolysaccharide (LPS)-stimulated RAW 264.7 macrophages.

Methods: High-performance liquid chromatography (HPLC) was used to determine the total polyphenolic content of SRE. RAW264.7 murine macrophages were incubated and pre-treated with SRE (0, 50,

100, 200, and 300 $\mu\text{g/ml}$) for 24 hours followed by treatments with LPS (50 ng/ml) for an additional 24 hours. Media was collected for assessment of nitric oxide (NO). SRE-treated cells induced with LPS were further examined to assess levels of reactive oxygen species (ROS).

Results: Cells treated with LPS and SRE did not show any decreases in cell viability. The polyphenolic contents of SRE were rutin (1,703.9 ppm), sinapic acid (1,136 ppm), rosmarinic acid (270.8 ppm), and chlorogenic acid (244.4 ppm). Reactive Oxidative Species (ROS) were decreased ($P < 0.05$) in LPS-stimulated macrophages treated with 50 and 100 $\mu\text{g/ml}$ SRE. Nitric oxide (NO) production was unaffected by SRE treatment at any dosage.

Conclusions: This is the first study to our knowledge to examine the antioxidative properties of SRE. These findings indicate that SRE may be efficacious as an antioxidative agent as it significantly decreased ROS production in LPS-stimulated macrophages. These results encourage researchers to further study SRE's polyphenolic profile and its additional antioxidative properties.

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