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## Effect of Cold Plasma on Total Polyphenol Content and Anti-Inflammatory Activities of Peanut (*Arachis hypogaea* L.) Hull

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### [Abstract]

In recent studies, cold plasma has been used to induce exudation of polyphenols and flavonoids from food materials, leading to enhancement of functional properties. And it is known that polyphenols interact with inflammation related metabolism. The objectives of this study were to investigate the effects of cold plasma treatments on the increase of total phenolic content (TPC), total flavonoid content (TFC), and anti-inflammatory activities of ‘Sinpalkwang’ peanut (*Arachis hypogaea* L.) hull. Plasma treatments were carried out using a dielectric barrier discharge gas exchange system at different radicals and temperatures (O<sub>3</sub>-25°C, O<sub>3</sub>-150°C, NO<sub>x</sub>-150°C). Significant differences in TPC, TFC, and inflammatory mediator such as nitric oxide (NO) and tumor necrosis factor α (TNF-α) in lipopolysaccharide stimulated Raw 264.7 macrophages were observed between treated and non-treated peanut hull samples ( $p < 0.001$ ). Cold plasma treated samples showed higher content (TPC: 2.87-2.93 mg/g sample, TFC: 0.96-0.98 mg/g sample) than non-treated sample (TPC: 2.47 mg/g sample, TFC: 0.78 mg/g sample). Cold plasma treated samples showed lower content of NO (3.3-5.0 uM) and TNF-α (141.4-162.2 ng/mL) than non-treated sample (NO: 11.1 uM, TNF-α: 210.2 ng/mL). This study suggests that cold plasma has potential to improve functionalities of food materials and that cold plasma treated peanut hull can be used as immune enhancing materials.

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