

## Polyphenols as potent antioxidants with a major role in food organoleptic properties and human health

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Polyphenols are natural substances which are recognized as one of the largest and most widespread class of plant constituents occurring throughout the plant kingdom. They are also found in substantial levels in commonly consumed fruits, vegetables and beverages. Polyphenols have aroused considerable interest because of their potential beneficial biochemical and antioxidant effects. These compounds show a great diversity of structures, ranging from rather simple molecules to polymers. Isolation and structural elucidation of polyphenols is very difficult because of their structural variability and reactivity. This is generally performed by a combination of chromatographic and spectroscopic methods, including ultraviolet, nuclear magnetic resonance and mass spectrometry.

Polyphenols are also highly reactive compounds which undergo numerous enzymatic and chemical reactions during postharvest food storage and processing thus adding to the complexity of plant polyphenol composition. Although the occurrence of such reactions and their roles in food quality are well documented, the structures of the resulting products are still poorly understood and their concentrations in food are usually unknown. The purpose of this presentation is an overview of our findings concerning the isolation of natural antioxidants with special emphasis on polyphenols and the implication of the latter in food organoleptic properties and human health.

**The three following points will thus be presented and discussed:**

- Isolation and identification of natural antioxidants
- Hemisynthesis and structure determination of derivatized monomeric and dimeric flavanols with investigation of their antioxidant properties
- Evolution of polyphenols in model solution systems and structure elucidation of the newly formed compounds

## Characterization and effect of lotion containing *Centella asiatica* extract-phospholipid complex on irritant contact dermatitis

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**Background:** ICD is among the most common skin disorder which is a biological response of the skin to a variety of external stimuli that induce skin inflammation without the production of specific antibodies. The most common therapeutic approach currently relies upon corticosteroids, but side effects can occur with prolonged use. *Centella asiatica* containing triterpenoid saponins which acts as antiinflammatory. CaE-P Complex serves as novel drug delivery system consisting of microscopic vesicle that enhanced the therapeutic effect of plant extracts.

**Aims:** To formulate, characterize and compare the effect of lotion containing CaE-P complex and lotion containing extract only. We also determine whether this lotion exerts preventive and/or therapeutic effects on ICD mice models.

**Materials and Methods:** Complex formation of Ca-P complex was confirmed by SEM, LC-MS/MS and FT-IR analysis. ICD was established by topical SLS as irritant which was applied once daily for 3 weeks on the dorsal skin. The pathological changes were evaluated using H&E staining.

**Results:** SEM showed CaE-P complex diameter range of 1,39-2,06  $\mu\text{m}$ . Asiaticoside as the marker compound with antiinflammatory properties follows  $m/z$  957,4 as parent mass with  $m/z$  468.30,  $m/z$  459.54,  $m/z$  470.89 as product ion. Our results demonstrate that this lotion of CaE-P complex exhibits both therapeutic and preventive effects in chronic ICD. Lotion containing CaE-P Complex also results better efficacy in ICD than lotion containing extract only.

**Conclusion:** These results suggest that this lotion of CaE-P complex could provide an alternative regimen for the prevention and treatment on ICD.