

**Poster LSH36**

## **Valorisation of Apple By-Products Using CO<sub>2</sub> and Cosolvent Extraction**

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Apple is the largest fruit production in France with 1.8 million of tons produced every year. Around 30% of the production is transformed in juices, compotes, concentrates, a processing that generates large volumes of peels. Meanwhile, apple peels have been identified as an important rich source of phenolic compounds with antioxidant activity. In order to turn a waste poorly valorized into products of interest, this work investigates the use of supercritical CO<sub>2</sub> to recover these high value components.

In this work, ground and dried apple peels were extracted by CO<sub>2</sub> + ethanol mixture (75% mol CO<sub>2</sub>) at 25 MPa and 50°C during 6 h. Extracts were regularly collected in order to describe accurately the extraction kinetics and fractionate potentially the phenolics pool. Extracts were characterized in terms of global yield, total phenolic content and antioxidant activity. Total phenolic content and antioxidant activity were evaluated with Folin-Ciocalteu and TEAC (Trolox Equivalent Antioxidant Capacity) methods, respectively. HPLC analyses of apple fractions were performed to identify the extracted phenolics, which were mostly catechin, 5'-cafeoylquinic acid, epicatechin, quercetin derivatives and phloridzin. Moreover, several fractions were assayed against colon cancer cells (HT29) in order to evaluate anti-tumoral activity of the CO<sub>2</sub> -produced extracts (ED50).

Over the duration of an extraction, the second fraction exhibited the highest antioxidant activity whereas the third one showed the highest inhibition activity on cancer cells growth. Hence, supercritical extraction allows fractionating high value compounds in two extracts of different properties.