

## O7

**PHENOLIC COMPOUNDS FRACTIONATION OF YARROW EXTRACT: ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITIES.**M. Villalva<sup>1</sup>, R. Gallego<sup>1</sup>, L. Jaime<sup>1</sup>, G. Reglero<sup>1,2</sup>, S. Santoyo<sup>1</sup>,<sup>1</sup> Institute of Food Science Research CIAL (CSIC-UAM). Universidad Autónoma de Madrid, 28049 Madrid, Spain.<sup>2</sup> Imdea-Food Institute. Universidad Autónoma de Madrid (CEI UAM-CSIC), 28049 Madrid, Spain.**Keywords:** Yarrow, Antioxidant activity, Anti-inflammatory activity, Amberlite resine XAD7.**Abstract**

*Achillea millefolium* L. commonly known as yarrow, is a flowering plant that belongs to the Asteraceae family, and is widely used in folk medicine against some health disorders like skin inflammation, gastrointestinal, as well as hepatobiliary complaints<sup>1</sup>. It seems that its abundance in phenolic compounds contributes to a wide range of its bioactive properties<sup>2</sup>. The aim of this study consisted in the characterization and evaluation of the antioxidant and anti-inflammatory activity of phenolic compounds presented in isolated fractions obtained by the use of XAD7 adsorption resins.

A yarrow extract was obtained by ultrasound assisted extraction (UAE) with pure ethanol. Phenolic compounds fractionation was subsequently performed on a XAD7 resin column using methanol:water as elution solvent, following this elution programme: 0:100, 20:80, 80:20 and 100:0. Fraction collected with 80:20 (MeOH:H<sub>2</sub>O) (named as Met-80) showed the highest phenolic compound content (226.7 mg GAE/ d.w.), and the highest antioxidant activity too (0.85 mmol TE/ g d.w.). Besides, phenolic acids and flavonoids were characterized in HPLC-PAD/MSMS showing that caffeic acid derivatives and flavones, specifically dicaffeoylquinic acid isomers, and luteolin and apigenin glucosyl derivatives, were the main compounds in Met-80 isolated fraction.

The anti-inflammatory activity from the original extract and the four fractions were also evaluated using a human macrophages model with THP-1 cell line. After bacterial lipopolysaccharide activation and incubation, the Met-80 yarrow fraction stood out with the highest inhibitory effect on the pro-inflammatory cytokines secretion (TNF- $\alpha$ , IL-1 $\beta$  and IL-6), being more effective with respect to the rest of the yarrow fractions, even to the original extract. These results suggest that phenolic acids and flavonoids are responsible of the antioxidant and anti-inflammatory activities from *Achillea millefolium*.

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**References:**

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