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## PC31. Antimicrobial activity of quality brands Spanish honeys.

Patricia Combarros-Fuertes (1)\*; M<sup>a</sup> Eugenia Tornadizo (1); José María Castro (1); Leticia M. Estevinho (2); José María Fresno (1)

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80-90% of patients with head and neck cancer who receives radiation and/or chemotherapy have oral mucositis. Oral mucositis is a complex process involving oxidative damage of oral mucosal, inflammation, mucosal colonization by pathogenic microorganisms and direct damage to DNA. The development of oral mucositis led to the interruption of the treatments, periods of hospitalization, dysphagia with malnutrition in patients and increased healthcare costs in treatments which have isolated mechanisms of action and are not fully satisfactory. As honey has antioxidant, anti-inflammatory, antimicrobial and healing properties, it can be used effectively in the prevention and treatment of oral mucositis by acting simultaneously on different pathophysiological mechanisms. The aim of this study was to evaluate the antimicrobial activity of honeys from different floral sources and to evaluate the possible differences that may happen in such capacity between similar honeys of different years of production. We selected six types of Spanish honey from quality brands avocado honey (*Persea* sp.) and chestnut honey (*Castanea* sp.) from DOP *Miel de Granada*; lavender honey (*Lavandula* sp.) and rosemary honey (*Rosmarinus officinalis*) from DOP *Miel de La Alcarria*; blackberry honey (*Rubus* sp.) and eucalyptus honey (*Eucalyptus* sp) from PGI *Miel de Galicia* and two organic honey, thyme honey (*Thymus* sp.) and heather honey (*Erica* sp.), collected during two consecutive harvests (2010 and 2011). We studied antimicrobial activity against microorganisms isolated from oropharyngeal mucosa of patients who suffer oral mucositis, Gram-positive (*Staphylococcus aureus* and *Streptococcus pyogenes*) and Gram-negative bacteria (*Pseudomonas aeruginosa* and *Escherichia coli*) and yeasts (*Candida albicans* and *Candida glabrata*). These assays gave us accurate information about what would be expected from the application of honey in those patients. Antimicrobial test were carried out according to Silva et al. (2012) using Nutrient Broth or Brain Heart Infusion to bacteria or Yeasts Peptone Dextrose to yeasts on microplates (96 wells). Honey was diluted in water and transferred into the first well. Serial dilutions were performed. 20 µl of a solution of 1% TTC was used for detect antimicrobial activity

*Candida albicans* and *Candida glabrata* showed higher resistance and their growth was not inhibited at the honey concentrations used. Further studies using higher concentrations of honey are required. Among bacteria all the tested honeys were able to inhibit their growth but showed different antimicrobial activity depending on the microorganism tested. Minimum inhibitory concentration ranged from 3.9 to 250 mg/ml. Generally gram-negative bacteria were less resistant, something that can be explained by the variability that exists in the resistance in bacterial strains within a specie. Differences were also observed in the antimicrobial activity of similar honeys from different years of production. Being a natural product, honey's composition is in a constant state of change, depending on factors such as climatology which affect plant species available.

1) Silva, J.C; Rodrigues, S; Feás, X; Estevinho, L.M. (2012) Antimicrobial activity, phenolic profile and role in the inflammation of propolis, *Food and Chemical Toxicology* 50: 1790-1795.

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