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**BİLDİRİ ÖZETLERİ
ABSTRACTS**



BACTERIOSTATIC AND BACTERICIDAL ACTIVITY OF DIFFERENT SPANISH HONEY

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Introduction

The aim of this study is to determine the antimicrobial capacity of Spanish honey from different floral and geographical origins in order to select one which shows higher antimicrobial activity to be used in the prevention and treatment of oral mucositis derived from treatments of radio and/or chemotherapy.

Honey and microorganisms tested

Two types of representative honey belonging to Spanish quality brands PDO Miel de Granada, PDO Miel de La Alcarria, PGI Miel de Galicia and two types of organic honey from the province of León (Spain) were selected. Except for a sample from La Alcarria, samples in two consecutive harvests were collected providing two sets corresponding to the harvests 2010 and 2011. A total of 15 samples were studied. In addition Manuka Honey (factor MGO 550 +) was used as a control.

Antimicrobial activity was tested *in vitro* against different bacteria species including reference strains of the Spanish Type Culture Collection (CECT) and strains isolated from the oropharynx of patients suffering from oral mucositis from the Hospital of León (Spain). The microorganisms tested were the Gram-positive bacteria *Staphylococcus aureus* and *Streptococcus pyogenes* as well as the Gram-negative bacteria *Escherichia coli* and *Pseudomonas aeruginosa*.

Antibacterial assay

The minimum inhibitory concentration (MIC) and minimum lethal concentration (MLC) were determined following the CLSI microdilution reference protocol M07-A9 (Clinical Laboratory Standards Institute, 2012). Honey concentrations tested were 400, 350, 300, 250, 200, 100, 50, 25, 12.5 and 6.25 mg/mL. The MIC value was defined as the lowest honey concentration that totally inhibits growth of microorganisms after 24 hours of incubation. MLC were determined by inoculating in plates 20 μ l of each well in which no growth was observed. The plates were incubated for 24 hours at 37 °C followed by counting colony forming units. MLC was defined as the lowest concentration of honey which reduces the viability of the initial inoculum by at least 99.9%.

Results

All honey samples studied were able to inhibit the growth and even cause lethal damage in all bacteria tested. MLC values were equal or slightly higher than the MIC values, thus honey showed not only bacteriostatic but also bactericidal activity. No significant differences between clinical and reference microorganisms with regard to their susceptibility to honey were observed. MIC and MLC values were very similar in both cases for each of the assayed microorganisms. *S.aureus* showed to be the most sensitive microorganism in all cases. Among the other organisms, no significant differences were seen, therefore it was not possible to establish a clear differentiation between the susceptibility of gram-positive and gram-negative microorganisms. An avocado honey (*Persea americana*), a chestnut honey (*Castanea sativa*) and a multiflower honey were the samples that showed the best antibacterial activity. Manuka honey showed similar or in some cases even less antimicrobial activity compared to the rest of the selected honey.

Keywords

antibacterial activity, honey, oral mucositis