Animal Models, Pathogenesis of Infectious Diseases and Host Defenses (Poster Presentation)

21.001

Dental Biofilm Prevention by *Mentha spicata* and *Eucalyptus camaldulensis* Essential Oils

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Background: Controlling the dental biofilm is one of the major approaches to reducing dental caries and periodontal diseases. With the increase in the prevalence of microbial resistance to conventional antiseptics and antibiotics, attention is now turning to the use of natural antimicrobial compounds. In this study we assess antimicrobial effects of *Mentha spicata* and *Eucalyptus camaldulensis* essential oils and chlorhexidine against *Streptococcus mutans*, and *Streptococcus pyogenes* with a particular focus on *in vitro*. and *in vivo* biofilm formation.

Methods: The essential oils were analyzed by GC and GC-MS. *In vitro* and *in vivo* antimicrobial and biofilm preventing activities of the oils were studied.

Results: Fifteen and twenty one compounds were identified in the essential oils of M. spicata and E. camaldulensis respectively. Minimal bactericidal concentrations (MBC) of the M. spicata and E. camaldulensis oils were found to be 4000 and 2000 ppm and those of chlorhexidine (2%) were 8000 and 1000 ppm for both S.mutans and S.pyogenes respectively. Decimal reduction time of S.mutans by M. spicata and E. camaldulensis oils at their MBC levels was 2.8 minutes while cholrhexidine showed longer time to completely kill S.mutans. D value of S.pyogenes exposed to the MBC levels of M. spicata and E. camaldulensis oils and of chlorhexidine were 4.3, 3.6 and 2.8 minutes respectively. Eucalyptus oil was the most effective agent inhibiting biofilm formation. Antibacterial and in vivo biofilm preventive efficacies of all the concentrations of eucalyptus oil were significantly ($P < 0.001$) higher than Mentha spicata oil and chlorhexidine. In conclusion, essential oils are capable of affecting biofilm formation.

Conclusion: Essential oils may find a role in the development of novel anticaries treatments.

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21.002

Experimental Infection in Cats with a cagA+, vacA+ Human Isolate of *Helicobacter pylori*

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Background: In contrast to humans, in whom H. pylori infection predominates, the investigation of pathogenicity in cats is complicated by the fact that they can be colonized by a variety of Helicobacter spp. To improve our understanding of Helicobacter infection in cats and determine whether they are reservoirs for H. pylori and sources of zoonotic transmission to humans, we selected this animal as an experimental model for gastric colonization with H. pylori.

Methods: Sixteen stray cats underwent Helicobacter eradication treatment followed by three consecutive oral inoculations of a cocktail of human isolates of H. pylori.

Results: Based on genus- and species-specific PCR, and the vacA and cagA-P1 genotypes, Four out of sixteen inoculated cats were colonized with a single H. pylori strain.

Conclusion: In conclusion, human H. pylori isolates are able to colonize the stomach of cats. It seems that these animals can be used as an experimental model in the future investigations of H. pylori-induced pathogenesis as well as evaluation of anti-H. pylori prevention and treatment regimens.

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21.003

A Simple and Rapid Method of Preparation of Rabbit Antiserum Against Alkyl Hydroperoxide Reductase (Ahpc) of Helicobacter pylori

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Background and aim: A growing interest in stool antigen tests for detection of H. pylori has recently been observed. Many studies show the Premium Platinum HpSA EIA (Meridian Diagnostics, Cincinnati, OH, USA) that uses non-specific polyclonal antibody as capture reagent has lower accuracy compared to monoclonal stool antigen test (FemtoLab H. pylori, Connex, GmbH. Germany). The application of high specific polyclonal antibody against H. pylori- specific antigens such as the AhpC may increase the specificity of the EIA. Furthermore, the anti-AhpC is useful for proteomic studies of H. pylori.

Materials and Methods: Preparative sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) of whole cell protein extract from H.pylori was performed according to Laemmli method and stained with Coomassie Brilliant Blue R-250 (CBB R-250).The part of gel containing the AhpC protein band was excised and removal of CBB-R250 from the part of gel was carried out according to Ball method. Polyclonal antibody was raised in adult New Zealand white rabbits by intramuscular injection and several subcutaneous injection on the back of rabbits homogenized protein band without Freund adjuvant. After the second and the third injections, the rabbits were bled and their sera were tested against whole cell protein extract and the purified electroeluted AhpC protein antigen.

Results: The antibody titer as a measure of quality 1:1000 dilution in an indirect enzyme immunoassay system was