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[Antimicrobial activity of soft and purified propolis extracts]

[Article in Lithuanian]

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OBJECTIVE: To evaluate the antimicrobial activity of soft and purified propolis extracts. **STUDY OBJECT AND METHODS:** Antimicrobial activity of soft and purified propolis extracts was determined with reference cultures of *Staphylococcus aureus* ATCC 25923, *Enterococcus faecalis* ATCC 29212, *Escherichia coli* ATCC 25922, *Klebsiella pneumoniae* ATCC 33499, *Pseudomonas aeruginosa* ATCC 27853, *Proteus mirabilis* ATCC 12459, *Bacillus subtilis* ATCC 6633, *Bacillus cereus* ATCC 8035, and fungus *Candida albicans* ATCC 60193. Microbiological tests were performed under aseptic conditions. Minimum inhibitory concentration (MIC)--the highest dilution of preparation (the lowest concentration of preparation) that suppresses growth of reference microorganisms--was determined. **RESULTS:** Concentration of phenolic compounds in soft propolis extract that possesses antimicrobial activity against gram-positive (*Staphylococcus aureus*, *Enterococcus faecalis*) and gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*, and *Proteus mirabilis*) is 0.587+/-0.054 mg and 0.587+/-0.054-0.394+/-0.022 mg (P>0.05) and in purified propolis extract--0.427+/-0.044 mg and 0.256+/-0.02 mg (P>0.05). *Klebsiella pneumoniae* is most resistant to soft propolis extract when the concentration of phenolic compounds is 1.119+/- 0.152 mg and to purified propolis extract when the concentration of phenolic compounds is 1.013+/-0.189 mg (P>0.05). Spore-forming *Bacillus subtilis* bacteria are more sensitive to soft and purified propolis extracts when the concentration of phenolic compounds is 0.134+/-0.002 mg and 0.075+/-0.025 mg, respectively, and *Bacillus cereus*--when the concentration is 0.394+/-0.022 mg and 0.256+/-0.02 mg (P>0.05). Sensitivity of fungus *Candida albicans* to soft and purified propolis extracts is the same as *Bacillus subtilis*. Encapsulated bacterium *Klebsiella pneumoniae* is most resistant to antimicrobial action of soft and purified propolis extracts as compared with gram-positive *Staphylococcus aureus* and *Enterococcus faecalis* bacteria (P<0.05), gram-negative *Escherichia coli*, *Pseudomonas aeruginosa*, and *Proteus mirabilis* (P<0.05), spore-forming *Bacillus subtilis* and *Bacillus cereus* bacteria (P<0.05), and fungus *Candida albicans* (P<0.05). There is no statistically significant difference between antimicrobial effect of soft propolis extract and purified propolis extract on gram-positive bacteria, gram-negative bacteria, spore-forming bacteria, encapsulated bacteria, and *Candida* fungus. **CONCLUSIONS:** Soft and purified propolis extracts possess antimicrobial activity. They could be recommended as natural preservatives in the manufacture of pharmaceutical products.




PMID: 19142056 [PubMed - in process]

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