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Antilithiaticeffect of some phytomedical products on nanobacteria-induced lithiasis in experimental animals

Thesis presented

By

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Abstract

Nanobacteria are unusual agents 100-fold smaller than common bacteria that can replicate apatite-forming units. They are the smallest cell-walled bacteria, only recently discovered in human and cow blood and in commercial cell culture serum. Recent evidence suggests a role for nanobacteria in a number of human diseases, especially renal stone formation. The present study is conducted to identify the chemical compositions of nine essential oils from some edible plants and to elucidate the nephroprotective activities of these oils against nanobacterial infection to lower the incidence of many hazard health problems in human and animals to avoid the existence diseases by these bacteria. Fifteen compounds were identified for each of tested oil by GC/MS analysis. Among all tested essential oils, sage, nutmeg, lemon, apricot and strawberry had *in vitro* anti-nanobacterial activity. Only, sage oil was found to be highly bacteriostatic at 125-µg ml^{-1} and bactericidal at 250-µg ml^{-1}. They prevented the nanobacterial-nephrotoxicity as evidenced by significantly reduced levels of serum urea and creatinine and prevented the renal tissues from severe pathological changes.

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CONTENTS

List of Abbreviations

Item	Name
NB	Nanobacteria
SF	Serum free media
DEME	Dulbecco-Vogt's modification of Eagle's medium
γ-FBS	gamma-irradiated Fetal bovine serum
MIC	Minimal inhibitory Concentration
MBC	minimal bactericidal concentration
GC-MS	Gas chromatography–Mass Spectrometry
(GC–TOFMS)	Gas Chromatography-Time-Of-Flight Mass Spectrometry
IAEC	Institutional Animal Ethical Committee
GFR	Glomerular Filtration Rate
CNPs	Calcifying Nanoparticles
EG	Ethylene Glycol
AC	Ammonium Chloride
DIC	Differential Interference Contrast
(FT-IR	Fourier transform infrared
EO	Essential oils
FIC	Fractional Inhibitory Concentration
TPC	Total Phenolic Content

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