



**Cairo University**  
**Faculty of Veterinary Medicine**  
**Department of Pharmacology**

# **Antilithiatic effect of some phytomedicinal products on nanobacteria-induced lithiasis in experimental animals**

**Thesis presented**

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**(VACSERA)**

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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- $\mu\text{g ml}^{-1}$  and bactericidal at 250- $\mu\text{g ml}^{-1}$ . 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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## List of Abbreviations

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



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