The Nutmeg-ical Solution: Investigating Bactericidal Effects of Myristica fragrans for Treatment of Helicobacter pylori Infection

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Helicobacter pylori is a persistent bacteria with defense mechanisms against the stomach's acidic environment, allowing it to predominate the lining of the stomach. It affects approximately 50% of the world population and can lead to gastritis, ulcers, and gastric cancer. Current treatment involves antibiotics and proton pump inhibitors, though the prevalence of antibiotic resistance calls for novel antibacterial agents. Since the bactericidal potentials of botanical extracts remain largely unexplored, this research investigates the effect of such compounds on H. pylori. Myristica fragrans (Nutmeg) is a medicinal plant used to treat stomach disorders and has reported antibacterial properties. Therefore, it is hypothesized that nutmeg constituents contribute to the eradication of H. pylori, rendering it a possible alternative treatment. Nutmeg extract was first purified by liquid-liquid chromatography, using acetonitrile and ethyl acetate as solvents to separate unusable plant oils and sugars. Viable compounds were isolated by column chromatography based on polarity and size, through reverse-phase C-18, normal-phase silica, gel, and HPLC columns. Biological activity was then tested through pair-dilution, where Columbia blood agar plates with different concentrations of each compound were inoculated with a controlled amount of H. pylori. H. pylori growth was observed and analyzed. Preliminary screening indicated that two of the fourteen tested compounds exhibited potent antibacterial activity against both wild-type and metronidazole-resistant strains of H. pylori. Since medicinal plants are also speculated to have anti-adhesive properties, further research should be conducted on simulated stomach environments.

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