Thyme and Thyme Again! Investigation of Synergistic Antimicrobial Activity of Thymus vulgaris Essential Oil in Combination with 'Superfood' Essential Oils

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Nearly 1 in 10 people are sickened by foodborne diseases each year. But, rampant use of broad-spectrum antibiotics can lead to antibiotic-resistant bacteria. Many cultures have natural methods of avoiding food spoilage, such as use of Essential Oils (EO). In recent years, there has been a renewed interest in EOs for naturally inhibiting bacteria because of their antimicrobial properties. For instance, the antimicrobial properties of Thymus vulgaris (Thyme) EO have been well documented. Synergistic combinations of EOs have also been reported to heighten efficacy. The goal of this study was to determine if blends of Thyme EO with other EOs, such as those of Clove and other superfoods like Moringa, Holy Basil and Turmeric will demonstrate synergy. Disc-diffusion method was used to screen the activity of EOs against common food-borne microorganisms; gram negative (Escherichia coli, Salmonella typhimurium, Pseudomonas aeruginosa), and gram positive (Listeria monocytogenes) bacteria, as well as the fungus Aspergillus brasiliensis. Results indicate that although Thyme EO had the highest inhibitory effect of all EOs tested, potential synergy was seen with Holy Basil, and, in some cases with Clove and Moringa. All blends with Turmeric EO were antagonistic. Synergistic relationships were seen for antifungal properties with Moringa EO. This clearly highlights that although many of the EOs exhibit antimicrobial characteristics, significant work is warranted prior to identifying synergistic blends. Moreover, it is recommended to study any interactions with bioavailable oils in the food products to avoid lowering of effectiveness of EOs, such as Thyme, due to any antagonistic interactions.