Effects of Thymus Vulgaris Essential Oil on Escherichia Coli

Jack N. Caldwell

The University of North Carolina at Charlotte

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ABSTRACT

Interaction of T. Vulgaris Oil and E. Coli

The ability for bacteria to become resistant to both antiseptics and antibacterial agents has been well documented, especially for the model bacteria *Escherichia coli.* The ability of E. coli to build immunity to the lethal tendencies of *Thymus vulgaris* essential oil was tested. The method by which T. vulgaris oil inhibits the growth of E. coli was also investigated and hypothesized upon. The agar diffusion method and an agar surface spreading method was used to determine the inhibition, and thus relative effectiveness, of various concentrations of T. vulgaris oil. The bacteria that showed most resistance, ie. least inhibition, were selected and recultured. The results of these cultures showed that E. coli did not significantly increase its resistance over a generation, even when the process of natural variation was accelerated by UV radiation. On average, the T. vulgaris oil increased in effectiveness against the artificially selected cultures, suggesting that the oil may decrease bacterial immunity mechanisms. If this is true, the oil could help reverse or slow the creation of multi-drug resistant bacterium. To better understand how T. vulgaris oil functions, simulations were run using the program Chimera. The experiment and research attempt to increase understanding the inhibition process of the oil, and its possible implications of the method.