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PP112. Effect of pH on the synergism of thymol and carvacrol against *Saccharomyces cerevisiae*

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Thymol and carvacrol are *natural* monoterpene phenols found in high concentration in various essentials oils including the oil of thyme. These monoterpene phenols are known to possess strong antiseptic activities [1]. In this study, I detail the effect that pH has on the synergism of thymol and carvacrol against the model organism, *Saccharomyces cerevisiae*. For every 0.1 unit interval in the pH range (6.4-8.4), IC_{50} values were measured based on the thymol content in the mixture of thymol and carvacrol. The maximum potency of *0.399 mg* L^{-1} was achieved at pH 6.4 using a 1:9 ratio of thymol to carvacrol – over 5 times more potent than thymol alone at pH 7.4 (IC_{50} = 2.05 mg L^{-1}). Understanding the synergy of the components in essential oils is one of the first steps in establishing alternative treatments to fight drug-resistant microorganisms. By combining essential oils or their components with existing antibiotic or antifungal agents, effective treatment of *superbugs* can be elucidated [2].

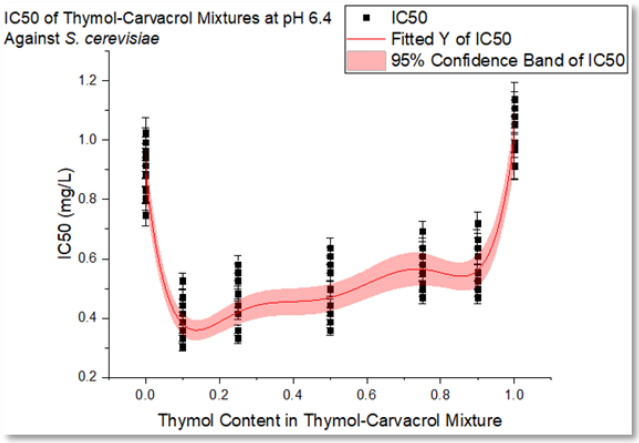

Fig. 1. Graph of all the measured IC_{50} values (mg L^{-1}) for the thymol-carvacrol mixture based on the composition of the mixture at pH 6.4 (R^2 = 0.880).

References:

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