Área temática: Métodos alternativos em toxicologia

SINERGY ASSAY USING CARVACROL AND CINNAMALDEHYDE IN *CAENORHABDITIS ELEGANS* MODEL ORGANISM: SEARCH FOR NEW ANTHELMINTIC AGENTS

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INTRODUCTION: Parasitic infections are controlled mainly with synthetic and semi-synthetic drugs. The resistance to traditional anthelmintics highlights the need for new, sustainable, and effective drugs. Essential oils are emerging as a promising solution to it. *Caenorhabditis elegans* has been widely used to search for new antiparasitic drugs. It is simple, low-cost, and has a short life cycle. **OBJECTIVE:** This study evaluated the synergy between carvacrol and cinnamaldehyde against *C. elegans, wild strain.* The bioactive compounds used were the principal components of *Origanum vulgare* and *Cinnamomum cassia* essential oils, which were previously studied for this group. **MATERIAL AND METHODS:** The compounds were diluted in 0.1% DMSO and tested on *C. elegans* in adults and egg stages. They were exposed to ten different concentrations (1 to 100µg/mL) and incubated at 21°C. The negative control was 0.1% DMSO. Ivermectin (adult) or albendazole (egg) was used as a positive control. Lethality and hatchability tests were run at 48 and 24 hours, respectively. The synergy index was analyzed using the SynergyFinder programs. **RESULTS:** The 50% lethal concentration for carvacrol, cinnamaldehyde, *O. vulgare,* and *C. cassia individually were* 6.8, 47.9, 1.0, and 53.1 µg/mL respectively. The combination analysis of carvacrol:cinnamaldehyde shows a synergy effect in 50:25 and 50:75 µg/mL for Bliss, Loewe, Zip, and HSA modes in adult worms. The same concentrations, in the egg stage, have negative scores, demonstrating addictive effects. **CONCLUSION:** All different synergy models showed that combinations of these compounds can enhance anti-parasitic efficacy throughout the adult worm of *C. elegans*. Thus, formulations containing carvacrol and cinnamaldehyde have the potential to provide an effective and sustainable alternative for parasite control. This study highlights *C. elegans* as a valuable, cost-effective model for preliminary screening of synergistic drug combinations.

Key words: Antiparasitic Agents; Low Cost Technology, Oils, Volatile

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