Title: Antimicrobial activity of carvacrol on Salmonella Typhimurium.

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Resume:

Salmonella spp. is a pathogen strongly associated with foodborne diseases. Food of animal or vegetable origin, fresh or processed can be a source of contamination. To avoid contamination, increasing demand for alternative to conventional treatments (synthetic substances) such as the use of natural compounds is an option due to low risk to health. Thus, the aim of this study was to evaluate the antibacterial activity of carvacrol, component of oregano essential oil, against Salmonella Typhimurium ATCC 14028. Initially the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of compound were determined using a broth microdilution assay at concentrations that ranged from 19 to 5000 μg/mL. To time-kill curve, 100 μl of a bacterial culture was inoculated (initial inoculum of approximately 6.10⁵ CFU/mL) in tubes with 10 mL of Mueller Hinton Broth (MHB) supplemented with carvacrol at 50 and 75% of MIC, MIC, and 1.5 x MIC 2 x MIC. As control, it was used tubes with 10 mL of MHB inoculated with bacterium. Tubes were incubated at 35 °C for 24 hours. At time intervals of 0, 1, 2, 3, 4, 5, 6, 12 and 24 hours, 100 μl aliquots were withdrawn from each tube and serial dilutions in saline solution were carried out. Dilutions were then inoculated into Mueller Hinton agar (MHA) and plates incubated at 35 °C for 24 hours. The results obtained for MIC and MBC were 312 μg/ml. After 24 hours of incubation, the results obtained in growth curve showed a population of 10⁹ CFU/mL in control tubes. At 75% concentration, MIC, 1.5 x MIC 2 x MIC no bacterial growth was visualized on agar plates in the first hour. Treatment with 50% MIC did not reduce bacterial counts during 24 hours, similar to control group. With these results, it was observed that treatment of S. Typhimurium with carvacrol was effective and could be an alternative for the control of this pathogen.

Keywords: Salmonella Typhimurium, carvacrol, time-kill curve assay.

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