

**Title: Antimicrobial activity of carvacrol on *Salmonella* Typhimurium.**

**Authors:** Trevisan, D. A. C.<sup>1</sup>, Silva, A.F.<sup>1</sup>, Bonin E.<sup>2</sup>, Santos, A.R.<sup>2</sup>, Rossi, I. V.<sup>3</sup>, Ribeiro, L. H.<sup>3</sup> Sá-Campanerut, P.A.Z.<sup>3</sup>, Mikcha, J.M.G.<sup>3</sup>

**Institution:** <sup>1</sup>Postgraduate Program in Health Science, State University of Maringá, Brazil; <sup>2</sup>Postgraduate Program of Food Science, State University of Maringá, Brazil; <sup>3</sup>Department of Clinical Analysis and Biomedicine, State University of Maringá, Brazil. Colombo Avenue 5790, Maringá, Paraná, 87020-900, Brazil.

**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 6.10<sup>5</sup> 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 At time intervals of 0, 1, 2, 3, 4, 5, 6, 12 and 24 hours, 100 µl aliquots were withdrawn from each tube and serial dilutions in saline solution were carried out.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 10<sup>9</sup> 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.

**Acknowledgments:** CNPq, PPG/UEM, CAPES