

## THE EFFECTS OF ANTIBIOTICS, NEEM OIL AND *TRICHODERMA* ON SPOILAGE BACTERIA AND FUNGI OF CHERRY TOMATOES

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### Abstract

This study investigated the effects of antibiotics, neem oil and *Trichoderma* on spoilage bacteria and fungi of cherry tomatoes. The bacterial and fungal spores and biochemical reactions of the bacterial strains (*Rahnella aquatilis*, *Microbacterium oxydans*, *Pseudomonas panacis*, *Gordonia sputa*, and *Escherichia coli*) from cherry tomatoes were measured. In addition, the bacterial response to antibiotics and the antifungal indices of neem (*Azadirachta indica*) essential oil and *Trichoderma* were analyzed in vitro.

The number of bacteria and fungus were 208.40 (x 10 colony/mL) and 6.40 (x 10 spores/mL), respectively. In the biochemical reactions (beta-galactosidase, arginine dihydrolase, lysine decarboxylase, ornithine decarboxylase, urea hydrolysis, and gelatinase), the selected bacterial strains were positive for the substrates of ONPG (ortho-Nitrophenyl-β-galactoside), arginine, lysine, ornithine, urea, and charcoal gelatin. In contrast, in these substrates (Na thiosulfate, tryptophan, Na pyruvate, inositol, rhamnose, sucrose, and melibiose), the biochemical reactions (H<sub>2</sub>S production, deaminas, indole production, acetoin production, and fermentation/oxidation) were negative for the selected bacterial strains. Cefatazidime (30 µg), Ciprofloxacin (CIP, 5 µg) and octafloxin (OFX, 5 µg) displayed the highest sensitivity against the tested bacterial strains. The neem oil and *Trichoderma* displayed the highest inhibition for *Aspergillus niger*.

Based on these results, antibiotics and neem oil can be useful for reducing the spoilage bacterial and fungal spores of cherry tomatoes.

**Key words:** *Aspergillus niger*, Biochemical reactions, *Solanum lycopersicum*, Vancomycin.