

## A survey of microbial contamination and purity of twelve types of Persian Medicine recommended spices in Tehran in 2016

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### Abstract:

**Background and Purpose:** Food poisoning with spices recommended by traditional medicine is reported worldwide, and may endanger public health. Hence, the extent of microbial contamination of spices requires to be addressed.

**Materials and Methods:** In this study, microbial contamination and purity of twelve Persian Medicine (PM) spices was evaluated in 79 random samples in Tehran in 2016 using powder microscopy and antibiotic sensitivity assessments. Eight disc-shaped types of antibiotics were used for antibiotic sensitivity evaluation using the National Committee for Clinical Laboratory Standards (NCCLS) table.

**Results:** The results showed that total bacteria count was higher than permitted levels in 26% of packaged and 35% of bulk spice samples. Contaminated samples mostly included aerobic mesophilic bacteria, Gram-positive cocci, and Gram-positive bacilli, yeast, and mold. Moreover, diagnostic and biochemical tests confirmed that the samples were not infected with *Bacillus anthracis* and *Bacillus cereus*. Two cases of *Aspergillus niger* contamination were observed in thyme and caraway spices, while ten cases of rhizopus contamination were seen in cumin, garlic powder and turmeric. In antibiogram results of samples with higher-than-permitted contamination, 12% of the bacteria showed resistance to tetracycline, 94% to penicillin, 24% to vancomycin, 12% to gentamicin, 82% to cefixime, 6% to ampicillin, 35% to ciprofloxacin, and 30% to ceftazidime.

**Conclusion:** The data showed that the spice samples were completely pure but they had a significant percentage of microbial contamination. The results of this study could be followed for further studies.

**Keywords:** Spices, Microbial contamination, Purity

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