

**Title** Food preservative potential of essential oils and fractions from *Cymbopogon citratus*, *Ocimum gratissimum* and *Thymus vulgaris* against mycotoxigenic fungi

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### Abstract

The food preservative potential of essential oils from three aromatic plants *Cymbopogon citratus*, *Ocimum gratissimum* and *Thymus vulgaris* and their fractions was investigated against two mycotoxigenic strains each of *Aspergillus ochraceus*, *Penicillium expansum* and *P. verrucosum*. The fungicidal activity was determined and expressed as a Number of Decimal Reduction of the colony forming units per ml (NDR cfu). The influence of pH variation on this activity was studied. The NDR cfu varied with the essential oils and its concentration, the pH of the medium and the strain tested. The essential oils from *O. gratissimum* exhibited the highest activity against the six fungal strains under the three pH tested. *T. vulgaris* and *C. citratus* essential oils were less active against the *Penicillium* species tested and *A. ochraceus*, respectively. Potassium sorbate did not present any activity at pH 6 and 9. At pH 3, its NDR cfu was the lowest against the six fungal strains. At the same pH and at 4000 ppm, the three essential oils presented a NRD cfu  $\geq 6$  against strains of *A. ochraceus* and *P. expansum*. The same result was obtained with *T. vulgaris* and *C. citratus* at 8000 ppm against both strains of *P. verrucosum*. The highest activity of the three essential oils was recorded at pH 3 against *A. ochraceus* strains and at pH 9 against both species of *Penicillium*. From the fractionation, three active fractions were obtained each from *C. citratus* and *O. gratissimum*, and two active fractions from *T. vulgaris*. These active fractions exhibited a NDR cfu, two to seven folds higher than that of the complete essential oils.