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Project Title

Ocimum based formulations as antifungal coatings to enhancing shelf life of Kinnow Fruit.

Introduction

Three Ocimum speices will be taken for extraction of essential oil. Out of these three species one best will be selected on the basis of in vitro studies conducted in lab for antifungal activity against Penicillium digitatum and Penicillium italicum.

Objective

1. To extract and evaluate antimycotic potential of essential oil of three *Ocimum* species.
2. To prepare micro and nanoformulations of essential oil of the shortlisted *Ocimum* specie.
3. To prepare and evaluate *in vitro* and *in vivo* antimycotic activity of *Ocimum* based micro and nanoshellac coating of best specie.

Method

1. Extraction and antimycotic activity of essential oil from different species of *Ocimum.*
2. Optimization for preparation of micro and nanoemulsions of essential oil from selected *Ocimum* specie.
3. Antimycotic activity of micro and nanoemulsions of essential oil of selected *Ocimum* specie (*In vitro*).
4. Preparation and antimycotic activity of *Ocimum* based micro/nanoshellac coating (*In vivo*)

Outcome

Development of micro/ nano sized antifungal coatings. For enhancement of shelf life of kinnow fruits and reduction of postharvest losses.

Implementation

Against post harvest pathogens of kinnow fruit.

Summary

Fungal pathogenic invasions in horticultural crops like kinnow substantially result in high post harvest losses. These losses pose big hindrance to the distant marketing of the fruit due to its shorter shelf life. Uses of factitious fungicides to conceal their invasion were not welcomed by investigators owing to their high persistence and toxicity residues causing environmental and health concerns. The major citrus postharvest diseases are green and blue molds, caused by Penicillium digitatum and Penicillium italicum. Present practice of applying synthetic fungicides in wax is employed for enhancing the shelf life of kinnow. Essential oils (EOs) are naturally occurring volatile mixtures obtained by various extraction methods from various parts of aromatic and medicinal plants. These are composed of non-phytotoxic biologically active compounds with promising antibacterial, antifungal and antioxidant properties. Ocimum is one such medicinal plant with promising antifungal potential, whose essential oils have not been explored for green and blue molds. Their applications, as antimicrobial agents for exploring their antifungal potential are however restricted owing to their hydrophobic nature. Advent of nanotechnology has provided another platform to overcome this drawback of essential oils. The present proposal is based on the development of micro and nanoformulations Ocimum leaf essential oil of the specie with best antimycotic potential. After in vitro scrutiny, In vivo experiments will be carried out at room temperature and under cold store conditions to work out the applicability of prepared shellac formulations of the best specie.