



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكروفيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



MONA MAGHRABY



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

**EFFECT OF EDIBLE COATING
APPLICATION ON QUALITY AND
SHELF LIFE OF STRAWBERRY FRUITS**

By

RWOTONEN INNOCENT BOB

B.Sc. Agric. Sci. (Horticulture), Fac. Agric., Makerere Univ., 2018

THESIS

**Submitted in Partial Fulfilment of the
Requirement for the Degree of**

MASTERS OF SCIENCE

In

**Agricultural Sciences
(Vegetable Crops)**

**Department of Vegetable Crops
Faculty of Agriculture
Cairo University
EGYPT**

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APPROVAL SHEET

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Date: 24 / 11 / 2020

SUPERVISION SHEET

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Degree: M.Sc.

Title of Thesis: Effect of Edible Coating Application on Quality and Shelf Life of Strawberry Fruits

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Department: Vegetable Crops

Date: 24 /11/ 2020

ABSTRACT

Utilization of the essential oils alone or incorporation with edible coating is an appropriate technique to conserve the quality attributes and reduce post-harvest deterioration in fresh vegetables and fruits. Strawberries are perishable fruits and have short shelf life. Essential oils or (and) edible coatings are considered as one of the most suitable method to extend its shelf life during refrigerated storage. Citrus essential oils (CEOs) have drawn more attention because of their antibacterial, and antifungal properties along with their high aromas, and flavors. Citrus essential oils enhance the sensory attributes of fruits and prevent microbial growth at low concentration. The current study assesses the impact of different eight edible coating and emulsion treatments including red beet root and essential oils. The treatments were ; T1=Beet alone (B), T2=Beet combined with orange (B+O), T3=Beet combined with lemon (B+L) and T4=Beet combined with mandarin (B+M) and emulsion with citrus essential oils, including: T5=Lemon oil (L), T6=Orange oil (O) and T7=Mandarin (M) on the physicochemical and microbial load of strawberry (*Fragaria × ananassa* cv. Festival) stored at 2±1°C and 95 % RH for 18 days.

The differences in the physicochemical and microbial properties of strawberry were assessed by determining the following parameter changes: weight loss, decay, firmness, soluble solids content (SSC), titratable acid, color, anthocyanins, vitamin C, total phenol (TPC), total antioxidant, catalase activity, polyphenol oxidase activity (PPO), and sensory evaluation, additionally microbial content (total coliforms, molds, and yeasts). Our results revealed that the fruits treated with edible coatings containing essential oils and red beet root had higher total antioxidant content and physicochemical properties than untreated fruits, they also offered great protection against the microbial growth of molds, and yeasts.

At the end of storage period, the treated fruits showed a greater acceptance and sensory attributes than the untreated fruits. Mandarin and beet + mandarin were the most effective treatments in reduction of weight loss, respiration rate, decay, microbial content, anthocyanin content, PPO activity and maintaining various properties such as; sensory properties, color, firmness, SSC, titratable acidity, ascorbic acid, TPC, antioxidant content, and catalase activity. It is noteworthy that all the treatments lead to extending the shelf-life of strawberries and delayed deterioration of strawberries up to 14 days.

Key words: Citrus essential oils, beet coating, *Fragaria × ananassa*, antioxidant content, antimicrobial effect, shelf-life

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