

EFFECT OF *Nigella arvensis* OIL ADDITION ON MICROBIOLOGICAL
COUNT AND SHELF LIFE OF TABLETS WITH
GUSTARD FILLING

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Effect of Nigella sativa oil addition on microbiological quality and shelf life of tartlets with custard filling / Nor Azni Mohd Yunos.

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EFFECT OF *Nigella sativa* OIL ADDITION ON MICROBIOLOGICAL QUALITY
AND SHELF LIFE OF TARTLETS WITH CUSTARD FILLING

By

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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged

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ABSTRACT

Nigella sativa or black seed is known as medical plant and used as natural remedy for illnesses. *Nigella sativa* is well known for their antimicrobial properties due to the presence of thymoquinone and other active components. In order to produce safer and more naturally produced food, *Nigella sativa* was use as substitution of synthetic preservative to control the microbiological quality in food. *Nigella sativa* oil was introduced to egg custard tartlets with custard filling at 0%, 3%, 6%, 9%, 12%, and 15%. Then, the microbiological quality and the effectiveness of antimicrobial properties of the products were studied before and after cooking process. The tartlets produced were then stored in 5^oC refrigerator for six days to examine the effect in the storage period. After the egg custard tartlets were added with *Nigella sativa* oil, microbiological quality and antimicrobial test were carried out. For unbaked samples, the results showed a decreasing numbers on microbiological count for up to 49% reduction compared to the control sample and inhibition zones in antimicrobial tests which showed inhibition activity by *Nigella sativa* oil. After the baking process, the antimicrobial agent in *Nigella sativa* was not active as heat treatment was applied to it but still showing antimicrobial activity with reducing up to 40% of microbial counts in *Staphylococcus aureus* and *Listeria*. After six days of storage, the microbiological quality for the samples with addition of *Nigella sativa* oil also showed the reduction in microbial counts in tryptone soy agar plate up until 56%.

ABSTRAK

Nigella sativa atau jintan hitam terkenal sebagai tumbuhan yang digunakan untuk tujuan perubatan dan digunakan secara semulajadi untuk merawat penyakit. *Nigella sativa* terkenal dengan fungsinya sebagai agen antimikrob yang disebabkan oleh kehadiran thymoquinone dan komponen-komponen aktifnya yang lain. Dalam usaha menyediakan produk yang lebih selamat dan semulajadi, *Nigella sativa* telah digunakan sebagai bahan pengawet bagi menggantikan penggunaan pengawet kimia yang mengawal kualiti mikrobiologi di dalam makanan. Minyak *Nigella sativa* telah dimasukkan ke dalam tatlet telur sebanyak 0%, 3%, 6%, 9%, 12%, dan 15%. Kemudian, kesannya terhadap kualiti mikrobiologi dan keberkesanan ciri-ciri antimikrob sebelum dan selepas proses memasak telah dikaji. Tatlet yang telah dihasilkan kemudiannya disimpan didalam peti sejuk dengan 5°C selama enam hari untuk mengkaji kesannya dalam tempoh penyimpanan. Bagi sampel yang tidak dibakar, kiraan microbial dalam sampel yang telah ditambahkan dengan minyak *Nigella sativa* telah menunjukkan penurunan sebanyak 49% berbanding dengan sampel kawalan dan juga telah menunjukkan respon positif dalam ujian antimicrobial dengan menunjukkan zon yang bebas pertumbuhan bakteria. Selepas dibakar, reaksi agen antimicrobial di dalam *Nigella sativa* tidak lagi aktif selepas terapi suhu dikenakan. Namun begitu, ia tetap menunjukkan reaksi dalam pengurangan kiraan mikrob sebanyak 40%. Selepas enam hari dalam proses penyimpanan, ujian kualiti mikrobiologi untuk sampel juga telah menunjukkan penurunan dalam kiraan mikrob di dalam sampel yang diTambah dengan minyak *Nigella sativa*.