

PENAMBAHAN KAROTEN UNTUK MENINGKATKAN STABILITAS DAN DAYA ANTIBAKTERI *VIRGIN COCONUT OIL* (VCO)

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ABSTRACT

The Addition of Carotene to Improve Virgin Coconut Oil Stability and Antibacterial Activity

The aim of the research was to find out the effect of carotene addition to VCO (Virgin Coconut Oil) stability and antibacterial activities. The VCO was made from coconut milk by centrifugation method and carotene was extracted from carrots. Carotene with concentration of 0.05%, 0.1%, and 0.15% were added into VCO and incubated in an oven at 63 ° C temperature for 29 days. The stability of VCO was determined from the peroxides value. The lower peroxide value was the highest stability. The antibacterial activity was determined using difusion test methods to the *Staphylococcus aureus* and *Escherichia coli* bacteria. The result of the research showed that the addition of carotene into VCO could decrease the peroxide value respectively and improve its antibacterial activity.

Keywords: *VCO, carotene, peroxide value, antibacterial activity*

SUMMARY

The Addition of Carotene to Improve Virgin Coconut Oil Stability and Antibacterial Activity

Pure coconut oil which commonly called VCO (Virgin Coconut Oil) became populer because it is believed beneficial for health. This is due to the fact that many MCFA (Medium Chain Fatty Acid) is easily decomposed in the body. VCO as antimicrobial and antiviral still can oxidized because however VCO is contain fat. The simplest way to produce VCO is using the centrifugation method because it did not use synthetic chemical substances. While the effort to avoid oxidation all this time done by adding artificial antioxidants, namely BHA (Butylated Hydroxyanisole) or BHT (Butylated Hydroxytoluen), and the packaging techniques using dark container to avoid direct light. But, synthetic or artificial chemical substances can give harmful side effect, the need to using natural materials has become an important requirement to the present and the future. Therefore, VCO is required to maximize the production of natural antioxidants that have a high content of carotene as antioxidants. The purpose of this study was to determine the effect of carotene addition to VCO (Virgin Coconut Oil) stability and antibacterial activities. In which carotene

extract obtained directly from carrot (*Daucus carota*). The stability of VCO can be observed by the peroxide number, while the bacterial activity test done by disc diffusion method. Presence of bacterial activity evidenced by the formation of inhibition around the paper disc area (clear zone).

This research gives the following data, which is the addition of carotene extract from carrots (*Daucus carota*) into the VCO during 29 days of storage at 63°C temperature can reduce the peroxide number. The bigger concentration of carotene extract is the bigger decrease of peroxide number. The addition of carotene extract from carrots (*Daucus carota*) in VCO also can increase antibacterial power. Thus, the addition of carotene may improve VCO stability and antibacterial activity. This research provides these following data, which is the addition of carotene extract at 0,05; 0,10; and 0,15% (m/v) from carrot (*Daucus Carota*) into the VCO during 29 days storage at temperature of 63°C can reduce the peroxide number of 3,410; 2,9464; and 2,5233 meq/kg, the larger concentration of carotene extract decrease the peroxide number. 63°C temperature is used as a quick method to simulate the real conditions of storage, and at these temperatures carotene still stable. Addition of carotene extract from carrots (*Daucus Carota*) in the VCO also can increase the antibacterial power of the karotene extract at levels of 0,05; 0,10; and 0,15% (m/v) can inhibit the growth zone of bacteria: *Staphylococcus Aureus* at 1,01; 1,15; 0,96 mm and *Escherichia Coli* at 1,15; 1,18; and 1,17 mm. Thus the addition of carotene extract at 0,05; 0,10; and 0,15% (m/v) may increase the stability inarow 0,8; 14,3; and 26,6% compared to the pure VCO control and antibacterial power of VCO against *Staphylococcus Aureus* 16,1; 32,2; and 10,3% while in *Escherichia Coli* at 9,5; 12,4; and 11,4% compared to the pure VCO control

RINGKASAN

Penambahan karoten untuk meningkatkan stabilitas dan daya antibakteri virgin coconut oil (VCO)

Minyak kelapa murni atau yang biasa disebut dengan VCO (*Virgin Coconut Oil*) menjadi populer karena dipercaya bermanfaat untuk kesehatan tubuh. Hal ini disebabkan banyaknya kandungan asam lemak rantai menengah atau MCFA (*Medium Chain Fatty Acid*) yang mudah diurai dalam tubuh. VCO yang bersifat antimikroba dan antivirus masih dapat mengalami oksidasi karena bagaimanapun juga VCO mengandung lemak.

Cara paling sederhana untuk menghasilkan VCO adalah menggunakan metode sentrifugasi karena sama sekali tidak menggunakan zat kimia sintetis. Sedangkan upaya untuk menghindari oksidasi selama ini dilakukan dengan cara menambahkan antioksidan buatan, yaitu BHA (*butylated hydroxyanisole*) atau BHT (*butylated hydroxytoluene*), serta teknik pengemasannya menggunakan wadah berwarna gelap untuk menghindarkan dari cahaya langsung. Namun bahan-bahan kimia sintetis atau buatan selama ini memberikan efek samping yang kurang menguntungkan, kebutuhan untuk menggunakan bahan-bahan alami sudah menjadi kebutuhan penting untuk masa kini dan masa mendatang. Maka untuk memaksimalkan produksi VCO diperlukan

antioksidan alami yang memiliki kandungan karoten tinggi sebagai antioksidan. Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan ekstrak karoten terhadap stabilitas dan daya antibakteri VCO. Dimana ekstrak karoten didapat langsung dari wortel (*Daucus Carota*). Stabilitas VCO dapat diamati berdasarkan angka peroksidanya, sedangkan uji aktifitas bakteri dilakukan dengan metode difusi cakram. Adanya aktifitas antibakteri pada *Staphylococcus Aureus* dan *Escherichia coli* dibuktikan dengan terbentuknya daerah penghambatan disekitar *paper disc* (zona bening).

Penelitian ini memberikan data-data sebagai berikut, yaitu penambahan ekstrak karoten sejumlah 0,05; 0,10; dan 0,15% (m/v) dari wortel (*Daucus Carota*) ke dalam VCO selama penyimpanan 29 hari pada temperatur 63°C dapat menurunkan angka peroksida sebesar 3,410; 2,9464; dan 2,5233 meq/kg, semakin besar konsentrasi ekstrak karoten semakin turun angka peroksidanya. Temperatur 63°C digunakan sebagai metode cepat untuk mensimulasikan penyimpanan dalam kondisi riilnya, dan pada suhu tersebut karoten masih tetap stabil. Penambahan ekstrak karoten dari wortel (*Daucus Carota*) pada VCO ini juga dapat meningkatkan daya antibakteri dari kadar ekstrak karoten 0,05; 0,10; dan 0,15% (m/v) dapat menghambat zona pertumbuhan bakteri : *Staphylococcus Aureus* sebesar 1,01; 1,15; dan 0,96 mm dan *Escherichia coli* sebesar 1,15; 1,18; dan 1,17 mm.

Dengan demikian penambahan ekstrak karoten sebesar 0,05; 0,10; dan 0,15% (m/v) dapat meningkatkan stabilitas berturut-turut 0,8; 14,3; dan 26,6% dibandingkan kontrol VCO murni dan daya antibakteri VCO terhadap *Staphylococcus Aureus* sebesar 16,1; 32,2; dan 10,3% sedangkan pada *Escherichia coli* sebesar 9,5; 12,4; dan 11,4% dibandingkan kontrol VCO murni.