

## Stabilitas fisik dan aktivitas antioksidan emulsi ganda tipe W/O/W minyak biji jinten hitam (*Nigella Sativa* Linn.) sebagai sediaan nutrasetika

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### Abstrak

Minyak biji jinten hitam (*Nigella sativa* Linn.) berpotensi sebagai salah satu sumber zat aktif untuk nutrasetika, terutama antioksidannya, juga berbagai asam lemak, tokoferol, fenol, dan -karoten. Minyak biji jinten hitam diformulasikan dalam emulsi ganda tipe W/O/W kemudian diamati stabilitas fisik, aktivitas antioksidan dalam sediaan, dan uji kesukaan. Dua formula dibuat dalam variasi penambahan NaCl 0,05M (formula 1 dan 3), tetapi tidak untuk dua formul lain (formula 2 dan 4) kemudian setiap formula divariasikan dengan konsentrasi tween 80 yang berbeda pada fase eksternal yaitu 1% (b/b) (formula 1 dan 2) dan 2% (b/b) (formula 3 dan 4). Stabilitas fisik diamati dari penyimpanan suhu rendah ( $4\pm 2^{\circ}\text{C}$ ), kamar ( $27-30^{\circ}\text{C}$ ), dan tinggi ( $40\pm 2^{\circ}\text{C}$ ), serta uji mekanik dan cycling test. Keseluruhan formula stabil dalam suhu kamar dan suhu rendah. Pada suhu tinggi dan cycling test, formula 3 (NaCl 0,05 M dan tween 80 2% (b/b)) memiliki kestabilan yang lebih baik daripada formula lainnya. Aktivitas antioksidan diuji menggunakan peredaman DPPH. Aktivitas antioksidan dalam sediaan lebih baik dibandingkan minyak karena penambahan protein kedelai berpotensi sebagai antioksidan juga. Penyimpanan sediaan akan menurunkan aktivitas antioksidan sediaan akibat autooksidasi. Formula emulsi ganda tipe W/O/W tersebut telah dapat memperbaiki aroma dan rasa minyak biji jinten hitam, tetapi belum untuk penampilannya.

.....Black cumin seed oil (*Nigella sativa* Linn.) is potential as one of active substances for nutraceutical, especially antioxidant, it also contains various fatty acids, tocopherol, phenol, and -carotene. Black cumin seed oil was formulated in W/O/W typed double emulsion to be observed physical stability, antioxidant activity, and hedonic test. Two formulas were made with the addition of NaCl 0,05M (formula 1 and 3) but not for the others (formula 2 and 4) then each formulas varied with different concentration of tween 80 in the external phase which is 1% (w/w) (formula 1 and 2) and 2% (w/w) (formula 3 and 4). Physical stability test including the storage in low ( $4\pm 2^{\circ}\text{C}$ ), ambience ( $27-30^{\circ}\text{C}$ ), and high temperature ( $40\pm 2^{\circ}\text{C}$ ); mechanical test; and cycling test. All formulas were stable in ambience and low temperature. Whereas, in high temperature and cycling test, formula 3 (NaCl 0,05 M with tween 80 2% (w/w)) had better stability than others. Antioxidant activity was determined by DPPH silencing methods. The entire formulas have better antioxidant activity than the oil itself because of soy protein which is potential as antioxidant. Storage would reduce antioxidant activity because of autooxidation in formulas. Formulation W/O/W typed double emulsion has been able to improve the odour and flavor of black cumin seed oil, but not for the appearance.