Antioksidan dan Anti-tirosinase Hasil Hidrolisis Papain Ekstrak Air Sarang Burung Walet (Aedramus sp.) serta Aplikasinya dalam Formulasi Gel Etil Askorbat = Antioxidants and Anti-tyrosinase of Papain Hydrolysis Water Extract of Edible Bird's Nest (Aedramus sp.) and Their Application in Ethyl Ascorbate Gel Formulation

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Abstrak

Indonesia dikenal sebagai salah satu penghasil sarang burung walet (SBW) terbesar di dunia. Protein hidrolisat SBW menunjukkan berbagai manfaat kesehatan. Tujuan penelitian ini adalah melihat pengaruh konsentrasi enzim (1, 2 dan 3% papain komersial) terhadap profil hidrolisat protein serta aktivitas antioksidan dan anti-tirosinase. Ekstrak teraktif SBW sebanyak 2% (F1), 3% (F2) dan 4% (F3) diaplikasikan dalam gel mengandung etil askorbat 2% dan diuji stabilitasnya pada berbagai suhu selama 12 minggu. Hasil uji SDS-PAGE menunjukkan bahwa hidrolisis menghasilkan peptida dengan berat molekul 15, 23 dan 35 kDa. Dengan meningkatnya konsentrasi enzim, meningkatkan jumlah peptida yang dihasilkan. IC50 antioksidan ABTS paling baik oleh ekstrak air SBW dengan aktivitas sedang (114,102 + 1,080 µg/mL), dan IC50 anti-tirosinase terbaik oleh ekstrak hasil hidrolisis SBW menggunakan 3% papain komersial dengan aktivitas lemah (6649,93+1,972 µg/mL). Pada suhu 4± 20C seluruh formula memiliki stabilitas secara fisik selama 12 minggu, namun pada suhu 30± 20C terjadi perubahan warna dan pada suhu 40 ± 20C, seluruh formula tidak stabil. Berdasarkan penelitian ini disimpulkan bahwa ekstrak air SBW memiliki aktivitas antioksidan terbaik yaitu sedang, sedangkan ekstrak hasil hidrolisis 3% menunjukkan aktivitas anti-tirosinase terbaik namun lemah. Gel F1, F2 dan F3 menunjukkan stabilitas yang baik pada suhu 4± 20C. Pada suhu 30± 20C dan 40 ± 20C tidak ada formula yang menunjukkan stabilitas.
.....Indonesia is known as one of the largest sources of edible bird’s nests (EBN) in the world. The hydrolyzed protein of EBN exhibits a variety of health benefits. The purpose of this study was to analyze the effect of enzyme concentrations (1, 2, and 3% commercial papain) on the protein hydrolyzate profile, its antioxidant and anti-tyrosinase activities. As much as 2% (F1), 3% (F2), and 4% (F3) of the most active EBN extract were applied in 2% ethyl ascorbate gel and tested for its stability at various temperatures for 12 weeks. SDS-PAGE test results showed that hydrolysis produced peptides with molecular weights of 15, 23, and 35 kDa. As the concentration of the enzyme increases, the amount of peptides increases. The test results showed the best IC50 antioxidant ABTS was EBN water extract with moderate activity (114.102 + 1.080 µg/mL), and the best anti-tyrosinase IC50 was EBN hydrolyzed extract using 3% commercial papain with weak activity (6649.93 +1.972 µg /mL). At 4 ± 20C all formulas had physical stability for 12 weeks, but at 30 ± 20C color change occurred and at 40 ± 20C, all formulas were unstable. Based on this study it was concluded that the SBW water extract had the best antioxidant activity, which is moderate, while the 3% hydrolyzed extract showed the best but weak anti-tyrosinase activity. F1, F2, and F3 showed good stability at 4 ± 20C. Meanwhile at 30 ± 20C and 40 ± 20C, no formulas showed good stability.