

## Intisari

Daun kakao merupakan salah satu hasil samping pemangkasan tanaman kakao. Daun kakao mengandung senyawa polifenol yang berfungsi sebagai antioksidan. Selama penyimpanan, senyawa polifenol mengalami oksidasi dan degradasi sehingga mempengaruhi aktivitas antioksidan. Peningkatan suhu dapat meningkatkan energi kinetik rata-rata molekul sehingga reaksi terjadi lebih cepat. UV-C memancarkan energi tinggi yang mengakibatkan ketidakstabilan senyawa yang dikenainya. Penelitian ini bertujuan untuk mengetahui pengaruh UV-C dan suhu penyimpanan terhadap persentase penurunan kandungan total polifenol, daya tangkap radikal DPPH (%RSA) dan kemampuan mereduksi (%RC), menentukan umur simpan, serta mengetahui gugus fungsi ekstrak kering beku daun kakao.

Daun muda (pucuk sampai daun ke-4) dan daun tua (daun ke-5 sampai ke-8) diperoleh dari daerah Sambipitu, Gunungkidul. Ekstraksi dilakukan dengan maserasi selama 32 jam menggunakan aseton teknis kemudian dikeringbekukan. Ekstrak kering beku disimpan pada suhu 35, 45, dan 55°C masing-masing dikondisikan terpapar UV-C dan tidak terpapar UV-C. Pada hari ke- 0,7,14,21,28, dan 35 dilakukan analisis kandungan total polifenol, %RSA, dan %RC. FTIR dilakukan pada hari ke-0 dan ke-42.

Hasil penelitian menunjukkan persentase penurunan kandungan total polifenol, %RSA, dan %RC masing-masing  $36,81 \pm 1,45\%$  –  $54,45 \pm 1,47\%$ ,  $36,58 \pm 4,65\%$  –  $76,49 \pm 0,78\%$ , dan  $38,26 \pm 1,59\%$  –  $63,36 \pm 0,89\%$ . Pada suhu 28°C, umur simpan ekstrak daun kakao kering beku dengan perlakuan terpapar UV-C dan tidak terpapar masing-masing 35,14 hari dan 51,07 hari. Ekstrak kering beku daun kakao yang telah disimpan selama 42 hari memiliki intensitas serapan yang lebih kecil dibandingkan dengan ekstrak yang belum disimpan. Gugus fungsi yang teridentifikasi berupa C=O, O–H, N–H, C–H, C–O, C–N, dan C = C.

Kata kunci: daun kakao, polifenol, UV-C, aktivitas antioksidan, umur simpan

### ***Abstract***

*Cacao leaves were by-product of cacao pruning. Cacao leaves contained phenolic compounds which had function as antioxidants. During storage, phenolic compounds underwent oxidation and degradation that could affect its antioxidant activities. Higher temperature could rise average kinetic energy of molecules thus reaction occur rapidly. UV-C radiated high energy resulting in instability of compounds that absorbed. The aim of this research were: to evaluate effect of UV-C and storage temperature on percentage of degradation of total polyphenolic compounds, DPPH radical scavenging activities (% RSA) and reducing power (%RC), to determine shelf-life, and to determine functional group of cacao leaves freeze-dried extract.*

*Young cacao leaves (shoot – 4th leaf) and mature cacao leaves (5th – 8th leaf) were obtained from Sambipitu, Gunungkidul. Extraction was done by maceration for 32 hours using acetone technical grade, then was freeze-dried. Cacao leaves freeze-dried extract were stored at 35, 45, and 55°C, each was conditioned UV-C exposed and un-exposed. On 0, 7th, 14th, 21st, 28th, and 35th day, extract were analyzed total polyphenolic compounds, %RSA, and %RC. FTIR was conducted on 0 and 42nd day.*

*Results showed that percentage of degradation of total polyphenolic compounds, %RSA, and %RC were ranged from  $36.81 \pm 1.45\%$  -  $54.45 \pm 1.47\%$ ,  $36.58 \pm 4.65\%$  -  $76.49 \pm 0.78\%$ , and  $38.26 \pm 1.59\%$  -  $63.36 \pm 0.89\%$ , respectively. At 28°C, Cacao leaves freeze-dried extract which exposed to UV-C had shelf-life for 35.14 days and 51.07 days on extract which un-exposed to UV-C. Cacao leaves freeze-dried extract that have been stored for 42 days had smaller absorption intensity compared to unstored extract. Functional groups that identified were: C = O, O – H, N – H, – C – H, – C – O, – C – N, and – C = C.*

*Keywords: cacao leaves, polyphenols, UV-C, antioxidant activities, shelf-life*