

**PENGARUH *MICROWAVE* DAN PENYANGRAIAN DENGAN METODE
OIL BATH TERHADAP WARNA, RASA, KADAR POLIFENOL DAN
POTENSI ANTIOKSIDAN PASTA KAKAO NON-FERMENTASI**

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ABSTRAK

Kakao merupakan salah satu komoditas pertanian di Indonesia yang memiliki potensi besar. Salah satu proses penting dalam pengolahan kakao adalah proses fermentasi dan penyangraian biji. Proses fermentasi diperlukan untuk membentuk prekursor senyawa flavor kakao. Proses fermentasi diketahui memerlukan waktu yang lama sehingga sebagian petani kakao enggan untuk melakukan proses tersebut. Biji kakao yang diolah tanpa melalui proses fermentasi akan memiliki kualitas flavor yang rendah. Proses penyangraian diperlukan untuk membentuk senyawa flavor kakao. Namun pada proses penyangraian konvensional diketahui adanya kelemahan dalam variasi ukuran biji. Salah satu teknologi yang dapat digunakan untuk mengatasi permasalahan tersebut adalah dengan menggunakan teknologi Energi Gelombang Mikro (EGM) sebagai pengganti fermentasi dan penggunaan penyangraian dengan metode oil bath. Perlakuan EGM diketahui dapat memicu pembentukan prekursor senyawa flavor seperti asam amino dan gula reduksi secara thermal. Selain itu, penyangraian menggunakan metode oil bath diketahui dapat meningkatkan pembentukan senyawa cita rasa. Disisi lain, penggunaan kedua perlakuan tersebut diketahui dapat membantu mempertahankan potensi antioksidan pada pasta kakao non-fermentasi yang dihasilkan. Hasil penelitian membuktikan bahwa perlakuan gelombang mikro terhadap biji kakao non-fermentasi dapat meningkatkan pembentukan prekursor senyawa cita rasa biji kakao (indeks gula, indeks nitrogen dan indeks warna). Berdasarkan data diketahui bahwa perlakuan gelombang mikro sebesar 1 KJ/g pada biji kakao non-fermentasi menghasilkan nilai indeks gula dan nitrogen paling optimal. Proses penyangraian metode oil bath juga diketahui memberikan pengaruh signifikan terhadap warna, rasa, kandungan polifenol dan aktivitas antioksidan pada pasta kakao non-fermentasi. Perlakuan penyangraian metode oil bath pada suhu 180 °C selama 30 menit memiliki karakteristik sensoris terbaik dan potensi antioksidan yang paling optimal. Penyangraian dengan metode oil bath pada suhu 180 °C selama 30 menit menghasilkan pasta kakao non-fermentasi dengan intensitas rasa pahit, asam, dan sepat terendah dengan flavor kakao yang paling kuat sehingga paling disukai oleh panelis. Pada kondisi penyangraian tersebut juga dihasilkan pasta kakao non-fermentasi dengan aktivitas antioksidan terbaik.

Kata kunci: non-fermentasi, prekursor flavor, sensoris kakao, antioksidan, TPC.

THE EFFECT OF *MICROWAVE* AND *OIL BATH* ROASTING METHOD ON COLOR, TASTE, POLYPHENOL CONTENT AND ANTIOXIDANT POTENTIAL OF NON-FERMENTED COCOA PASTE

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Cocoa is one of the agricultural commodities in Indonesia which has great potential. One of the important processes in cocoa processing is the process of fermentation and roasting of the beans. The fermentation process is needed to form cocoa flavor compound precursors. But unfortunately, the fermentation process is known to take a long time so that some cocoa farmers in Indonesia are reluctant to carry out the process. Cocoa beans that are processed without going through a fermentation process will have a low flavor quality but have a high polyphenol content. Apart from fermentation, the roasting process is also an important process in cocoa processing. The roasting process is required to form cocoa flavor compounds. However, the conventional roasting process that is commonly used is known to have weaknesses, namely the variation in seed size so that it can reduce the optimization of existing cocoa flavor compound formation. One technology that can be used to overcome this problem is to use Microwave Energy (EGM) technology as a substitute for fermentation and the replacement of the roasting process from the conventional method to the oil bath method. Thermal treatment of EGM is known to trigger the non-enzymatic formation of precursors of flavor compounds such as amino acids and reducing sugars. In addition, roasting using the oil bath method in the form of cocoa paste is known to increase the formation of flavor compounds. On the other hand, the use of both treatments is known to help maintain the antioxidant potential of the resulting non-fermented cocoa paste. The results of the study proved that microwave treatment of non-fermented cocoa beans produced could increase the formation of existing cocoa bean flavor precursors (sugar index, nitrogen index and color index). Based on the data it is known that the microwave treatment of 1 KJ/g on non-fermented cocoa beans produces the most optimal sugar and nitrogen index values. The oil bath roasting process is also known to have a significant effect on sensory characteristics, polyphenol content and antioxidant activity in the resulting non-fermented cocoa paste. The oil bath roasting treatment at 180 °C for 30 minutes had the best sensory characteristics and the most optimal antioxidant potential. Roasting with the oil bath method at 180 °C for 30 minutes produced non-fermented cocoa paste with the lowest intensity of bitter, sour and astringent flavors with the strongest cocoa flavor, so it was the most preferred by the panelists. In addition, under these roasting conditions, non-fermented cocoa paste with the best antioxidant activity was produced.

Keywords: non-fermentation, flavor precursor, chocolate sensory, antioxidants, TPC