

**POTENSI FLAKES BERBAHAN DASAR PATI GARUT DENGAN  
SUBSTITUSI TEPUNG RUMPUT LAUT *Eucheuma cottonii*  
DALAM PENURUNAN KADAR GLUKOSA DARAH DAN  
PERBAIKAN PROFIL LIPID TIKUS DIABETES MELLITUS TIPE 2**

**INTISARI**

*Eucheuma cottonii* merupakan salah satu jenis rumput laut merah tinggi serat pangan dengan jumlah produksi yang cukup melimpah di wilayah Indonesia. Serat pangan dari *E. cottonii* diketahui bermanfaat dalam penurunan kolesterol dan glukosa darah. Pemanfaatan *E. cottonii* sebagai produk pangan dengan manfaat kesehatan dan diterima oleh masyarakat perlu dikaji lebih mendalam. Salah satu jenis produk pangan yang banyak digemari masyarakat saat ini adalah produk pangan siap saji, yaitu flakes.

Pada penelitian ini dilakukan pembuatan flakes dengan bahan pati garut dan tapioka dengan substitusi tepung rumput laut *E. cottonii*. Substitusi tepung rumput laut *E. cottonii* diharapkan mampu meningkatkan kandungan serat pangan pada flakes. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian flakes pati garut dengan substitusi tepung rumput laut *E. cottonii* terhadap penurunan kadar glukosa darah dan perbaikan profil lipid tikus DM tipe 2.

Flakes diuji secara sensori dengan uji hedonik dan deskriptif. Flakes terpilih yang disukai panelis lalu dikarakterisasi sifat kimia, fisik, serta pengaruh konsumsinya pada tikus DM tipe 2 terhadap penurunan kadar glukosa darah dan perbaikan profil lipid. Dalam uji *bioassay*, digunakan tikus *Sprague Dawley* jantan sebanyak 25 ekor usia 2 bulan dan berat tubuh 170-220 g. Flakes menggantikan pakan standar AIN-93 M sebanyak 30% dari total energi. Pengujian daya absorpsi glukosa dilakukan secara *in-vitro* dengan metode kantung usus terbalik.

Hasil penelitian menunjukkan bahwa panelis masih dapat menerima flakes dengan substitusi tepung rumput laut 0, 10, dan 20%, dengan kandungan serat pangan masing-masing sebesar 3,52; 13,63; dan 20,30% *db*. Hasil pengujian *bioassay* menunjukkan bahwa diet flakes dengan 10% dan 20% rumput laut memiliki kemampuan yang sama dalam penurunan kadar glukosa darah tikus selama 4 minggu masa intervensi, namun flakes 20% rumput laut memiliki potensi penurunan kadar glukosa lebih tinggi pada minggu ke-4, yakni sebesar 66,01%. Diet flakes 20% rumput laut memberikan hasil terbaik dalam perbaikan profil lipid, dengan persentase penurunan kadar kolesterol total, trigliserida, dan LDL masing-masing sebesar 28,12%, 36,75%, dan 58,42%, serta meningkatkan kadar HDL sebesar 142,96%. Diet flakes 10% dan 20% rumput laut mampu meningkatkan produksi asam lemak rantai pendek (SCFA), menurunkan pH digesta, dan menghambat absorpsi glukosa.

**Kata kunci** : pati garut, rumput laut *E. cottonii*, serat pangan, Diabetes Mellitus tipe 2, glukosa darah, profil lipid, asam lemak rantai pendek (SCFA), daya absorpsi glukosa

**POTENCY OF ARROWROOT STARCH FLAKES  
WITH SUBSTITUTION OF SEAWEED POWDER *Eucheuma cottonii*  
IN DECREASING BLOOD GLUCOSE AND IMPROVING LIPID  
PROFILE IN TYPE 2 DIABETES MELLITUS RATS**

**ABSTRACT**

*Eucheuma cottonii* is one type of red seaweed which is high in dietary fiber with the amount of production is quite abundant in Indonesia. Dietary fiber from *E. cottonii* is known to be useful in lowering cholesterol and blood glucose. Utilization of *E. cottonii* as a food product with health benefits and accepted by the society needs to be studied more. One type of food products that much liked by society nowadays is fast food products, such as flakes.

In this study, flakes product was made from arrowroot starch and tapioca with substitution of seaweed powder *E. cottonii*. Substitution of seaweed powder *E. cottonii* was expected to increase the content of dietary fiber in flakes. This study aims to determine the effect of arrowroot starch flakes with substitution of seaweed powder *E. cottonii* in decreasing blood glucose levels and improving lipid profile of type 2 diabetes mellitus rats.

Flakes were tested by hedonic and descriptive tests. The preferred flakes were characterized in chemical, physical, and consumption effects in type 2 DM rats on decreasing blood glucose levels and improving lipid profile. In bioassay test, 25 male *Sprague Dawley* rats age 2 months and body weight 170-220 g was used. Flakes replaced the standard AIN-93 M feed by 30% of the total energy. Absorption rate of glucose was carried out with reverted intestine sack.

The results showed that panelists were still able to receive flakes with 0, 10, and 20% seaweed substitution and dietary fiber content was 3,52; 13,63; and 20,30% db respectively. The results of bioassay test showed that diet flakes with 10% and 20% seaweed had the same ability in decreasing blood glucose level of rats during 4 weeks intervention period, but flakes 20% seaweed had higher potency for decreasing blood glucose up to 66,01% in the fourth week. Diet flakes 20% seaweed gave the best results in the improvement of lipid profile, with the decreasing percentage of total cholesterol, triglyceride and LDL was 28,12%, 36,75%, and 58,42%, respectively, and increased HDL up to 142,96%. Diet flakes 10% and 20% seaweed can increase the production of short-chain fatty acids (SCFA), lowering the pH content of the caecum, and inhibit the absorption of glucose.

**Key words** : arrowroot starch, seaweed *E. cottonii*, dietary fiber, Diabetes Mellitus type 2, blood glucose, lipid profile, short chain fatty acids (SCFA), glucose absorption