

## **Karakteristik Gelatin Kulit Kerbau Dan Aplikasinya Sebagai Enkapsulan Minyak Atsiri Daun Cengkeh (*Syzygium Aromaticum*)**

### **INTISARI**

Gelatin merupakan protein yang diperoleh dari hidrolisis parsial kolagen yang ditemukan di dalam kulit, tulang, dan jaringan ikat hewan. Gelatin diekstraksi dari kolegen kulit kerbau. Penelitian ini dilakukan untuk mengetahui karakteristik gelatin kulit kerbau dan aplikasinya sebagai enkapsulan pada mikroenkapsulasi minyak atsiri daun cengkeh.

Pada penelitian ini gelatin kulit kerbau diekstrak menggunakan larutan asam klorida (Tipe A) dengan menggunakan konsentrasi asam klorida (1%, 2%, dan 3%) dan suhu ekstraksi (60 °C, 70 °C, dan 80 °C) selama 5 jam. Gelatin kulit kerbau terpilih diaplikasikan sebagai enkapsulan minyak atsiri daun cengkeh dengan perbedaan konsentrasi gelatin (5%, 7,5%, dan 10%) dan rasio antara minyak atsiri daun cengkeh dengan gelatin (1:10, 1:15 dan 1:20).

Hasil penelitian menunjukkan gelatin kulit kerbau terpilih diekstraksi menggunakan larutan asam klorida konsentrasi 1% dengan suhu ekstraksi 70 °C. Rendemen gelatin kulit kerbau sebesar 56,73%, kadar air 7,4%, kadar abu 0,06%, kadar protein 89,1%, kadar lemak 0,04%, viskositas 4,8 cP dan kekuatan gel gelatin 155,39 g Bloom. Karakteristik mikrokapsul minyak atsiri daun cengkeh kadar air 3,58 %,  $a_w$  0,42, kelarutan 79,72 %, Higroskopisitas 6,85 %, total minyak 0,65 µg/mg, minyak terperangkap 0,57 µg/mg, minyak dipermukaan 0,078 µg/mg dan efisiensi mikrokapsul 85,92 %. Morfologi mikrokapsul minyak atsiri daun cengkeh berbentuk oval dan tidak beraturan.

Kata kunci: kulit kerbau, gelatin, asam klorida, minyak atsiri daun cengkeh, mikroenkapsulasi.

## ABSTRACT

### **Characteristics Of Buffalo Skin Gelatin and Its Application In Microencapsulation Of Clove Leaves Essential**

Gelatin is protein obtained from partial hydrolysis of collagen contained in animal skin, bone, connective tissue. In the present study, gelatin was extracted from buffalo skin collagen and then applied as wall material in microencapsulation of clove leaves essential oil. Characteristics of buffalo skin gelatin and its application in microencapsulation of clove leaves essential oil were studied.

Buffalo skin collagen was extracted using hydrochloric acid (type A) at various concentrations (1%, 2%, 3%) and temperatures (60 °C, 70 °C, 80 °C) for 5 hours. Selected gelatin was then applied as wall material in clove leaves essential oil microencapsulation at gelatin concentration of 5%, 7.5%, and 10%, at various ratios between oil and gelatin (1:10, 1:15 and 1:20).

Results showed that selected gelatin was obtained by 1% hydrochloric acid at 70 °C, resulted 56.73% yield with 7.4% moisture content, 0.06% ash content, 89.1% protein, 0,04% fat content, viscosity of 4.8 cP, and gel strength of 155.39 g Bloom. Microcapsule of clove leaves oil contained 3.58% moisture ,  $a_w$  of 0.42, solubility of 79.72 %, hygroscopicity 6.85 %, total oil content 0.65 µg/mg, trapped oil 0.57 mg/ml, surface oil 0.078 µg/mg and microcapsulation efficiency 85.92 %. The oil microcapsule's morphology was oval and irregular.

*Keywords: buffalo skin, gelatin, clove leaves essential oil, microencapsulation.*