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LAMPIRAN

Lampiran 1

Skema penyiapan simplisia dan isolasi

Alga cokelat segar
(*Sargassum polycystum*)

- Dikumpulkan sampel
- Disortasi basah
- Dicuci dengan air garam
- Dicuci dengan air mengalir
- Dicuci dengan aquades
- Dikeringkan dengan cara diangin-anginkan
- Disortasi kering

Simplisia alga cokelat
(*Sargassum polycystum*)

- Pengecilan ukuran partikel simplisia
- Diayak dengan ayakan no. mesh 100
- Ditimbang sebanyak 200 g
- Diekstraksi dengan menggunakan larutan asam klorida 0,1 N sebanyak 1000 mL selama 4 jam pada suhu 85±5° C
- Disaring menggunakan kain saring

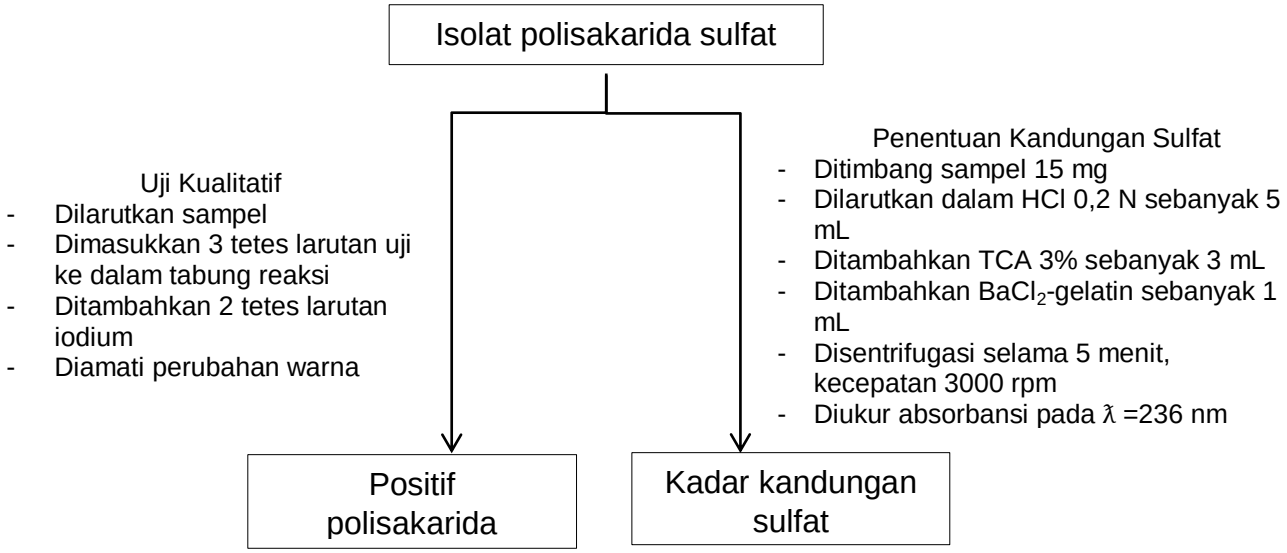
Ekstrak cair alga cokelat
(*Sargassum polycystum*)

- Dicampurkan $CaCl_2$ 2% dengan perbandingan (1:2)
- Diambil filtrat yang terbentuk
- Ditambahkan etanol 96% ke dalam filtrat dengan perbandingan (1:1)
- Diambil endapan yang terbentuk
-Dikeringkan dalam oven 50°C
-Digerus

Isolat Polisakarida Sulfat

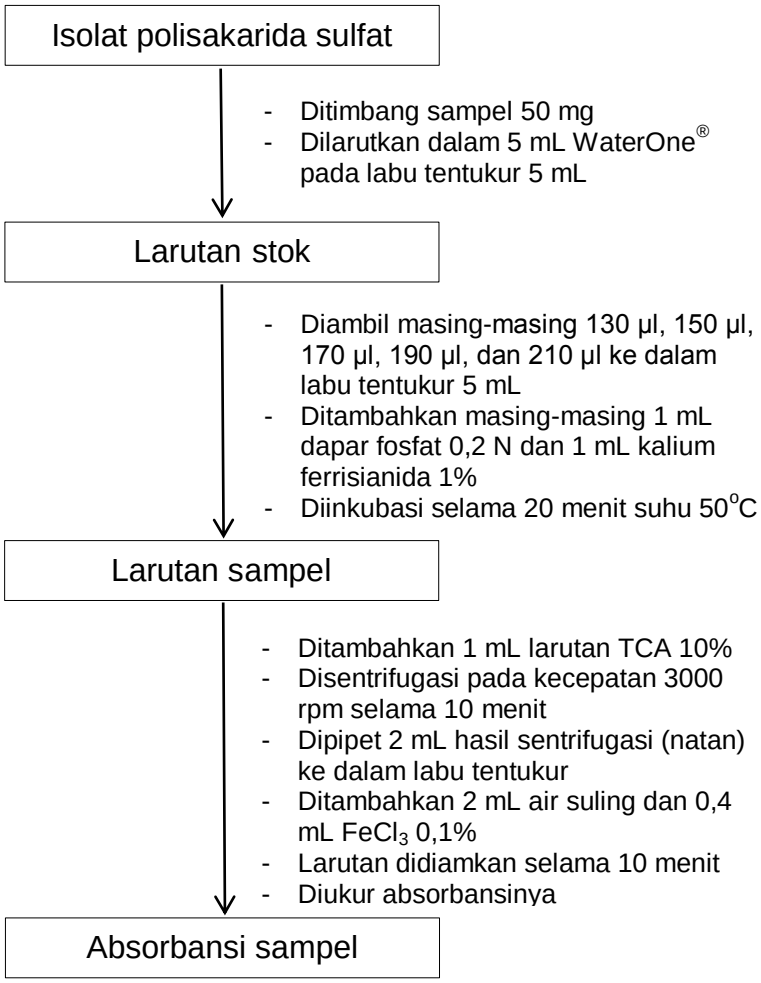
Lampiran 2

Skema identifikasi senyawa polisakarida sulfat



Lampiran 3

Skema uji aktivitas antioksidan metode FRAP



Lampiran 4

Perhitungan persen rendemen dan kandungan sulfat

1. Perhitungan persen rendemen

Rendemen (%) = $\frac{\text{Bobot ekstrak (g)}}{\text{Bobot awal (g)}}$ x 100%

Rendemen (%) = $\frac{12,73}{200}$ x 100%

Rendemen (%) = 6,36%

2. Perhitungan Kandungan Sulfat

a. Regresi linear kurva baku

Rata-rata absorbansi sampel = 0,406

y = ax + b

y = 0,0012x + 0,1147

0,406 = 0,0012x + 0,1147

x = 242,75 bpj

b. Kadar sulfat dalam sampel sebenarnya

= faktor pengenceran x konsentrasi

= 5 x 242,75 bpj

= 1213,75 bpj

c. Kadar Sulfat dalam Polisakarida Sulfat (Fukoidan)

Konsentrasi Sampel = 3000 bpj

= $\frac{1213,75}{3000}$ x 100%

= 40,45%

Lampiran 5

Perhitungan Uji Aktivitas Antioksidan

1. Persentase Inhibisi Radikal Bebas Baku Vitamin C

$$\%FRAP = \frac{(\text{Rata-rata serapan sampel})\text{-}(\text{Rata-rata serapan blanko})}{(\text{Rata-rata serapan sampel})} \times 100\%$$

Konsentrasi 12 bpj = $\frac{0{,}4140 - 0{,}1077}{0{,}4140} \times 100\% = 73{,}99\%$

Konsentrasi 16 bpj = $\frac{0{,}4893 - 0{,}1077}{0{,}4893} \times 100\% = 78{,}00\%$

Konsentrasi 20 bpj = $\frac{0{,}6087 - 0{,}1077}{0{,}6087} \times 100\% = 82{,}31\%$

Konsentrasi 24 bpj = $\frac{0{,}7267 - 0{,}1077}{0{,}7267} \times 100\% = 85{,}18\%$

Konsentrasi 28 bpj = $\frac{0{,}7920 - 0{,}1077}{0{,}7920} \times 100\% = 86{,}41\%$

Tabel 7. Hasil pengukuran aktivitas antioksidan vitamin C Metode FRAP

No	Zat Uji	Konsentrasi (bpj)	Serapan	Rata-rata absorbansi	Log Konsentrasi (x)	%FRAP	Nilai probit (y)
1	Blanko FRAP	Blanko	0.105 0.106 0.112	0.1077			
2	Baku Vitamin C	12	0.403 0.437 0.402	0.4140	1.079	73.99	5.637
		16	0.481 0.470 0.517	0.4893	1.204	78.00	5.740
		20	0.671 0.645 0.510	0.6087	1.301	82.31	5.923
		24	0.736 0.682 0.762	0.7267	1.380	85.18	6.072
		28	0.781 0.802 0.793	0.7920	1.447	86.41	6.085

Perhitungan Persamaan Kurva Baku:

y = 4,1658 + 1,3458x a = 4,1658 b = 1,3458 r = 0,9639

Perhitungan IC50 :
y = a + bx
y = 4,1658 + 1,3458x
5 = 4,1658 + 1,3458x
X = 0,6198
Log x = 4,1667 bpj (IC50) (Aktivitas sangat kuat)

2. Persentase Inhibisi Radikal Bebas Isolat Polisakarida Sulfat

$$\%FRAP = \frac{(\text{Rata-rata serapan sampel})-(\text{Rata-rata serapan blanko})}{(\text{Rata-rata serapan sampel})} \times 100\%$$

Konsentrasi 260 bpj = $\frac{0,2137 - 0,0500}{0,2137} \times 100\% = 76,60\%$

Konsentrasi 300 bpj = $\frac{0,2857 - 0,0500}{0,2857} \times 100\% = 82,50\%$

Konsentrasi 340 bpj = $\frac{0,3030 - 0,0500}{0,3030} \times 100\% = 83,50\%$

Konsentrasi 380 bpj = $\frac{0,3233 - 0,0500}{0,3233} \times 100\% = 84,54\%$

Konsentrasi 420 bpj = $\frac{0,3710 - 0,0500}{0,3710} \times 100\% = 86,52\%$

Tabel 8. Hasil pengukuran aktivitas antioksidan senyawa polisakarida sulfat metode FRAP

No	Zat Uji	Konsentrasi (bpj)	Serapan	Rata-rata absorbansi	Log Konsentrasi (x)	%FRAP	Nilai probit (y)
1	Blanko FRAP	Blanko	0.048 0.054 0.048	0.0500			
2	Polisakarida Sulfat	260	0.212 0.219 0.210	0.2137	2.415	76.60	5.71
		300	0.284 0.286 0.287	0.2857	2.477	82.50	5.92
		340	0.302 0.304 0.303	0.3030	2.531	83.50	5.95
		380	0.326 0.329 0.315	0.3233	2.580	84.54	6.01
		420	0.372 0.370 0.371	0.3710	2.623	86.52	6.09

Perhitungan Persamaan Kurva Baku:

y = 1,7504+1,6575x a = 1,7504 b = 1,6575 r = 0,9896

Perhitungan IC50 :
y = a + bx
y = 1,7504+1,6575x
5 = 1,7504+1,6575x
X = 1,9605
Log x = 91,306 bpj (IC50) (Aktivitas kuat)

Lampiran 6

Dokumentasi penelitian

Gambar 13. Sampel segar alga cokelat *Sargassum polycystum*

Gambar 14. Proses ekstraksi alga cokelat *Sargassum polycystum*

Gambar 15. Ekstrak cair alga cokelat *Sargassum polycystum*

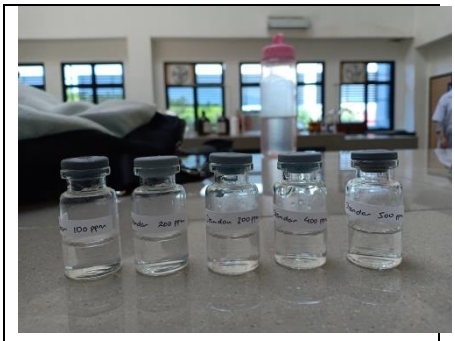
Gambar 16. Penambahan ekstrak cair ke dalam larutan $CaCl_2$ 2%

Gambar 17. Hasil penambahan etanol 96%

Gambar 18. Isolat polisakarida sulfat yang telah dikeringkan

Gambar 19. Larutan standar Vitamin C untuk pengukuran antioksidan

Gambar 20. Larutan isolat polisakarida sulfat untuk pengukuran antioksidan



Gambar 21. Larutan standar Na_2SO_4 untuk pengukuran kadar sulfat

Gambar 22. Larutan isolat polisakarida sulfat untuk pengukuran kadar sulfat