

LAMPIRAN

Lampiran 1. Perhitungan Sampel Ekstrak Kulit Manggis

1. Perhitungan Rendemen Ekstrak Kulit Manggis

$$\begin{aligned}\text{Rendemen} &= \frac{\text{Berat ekstrak kental}}{\text{Berat sampel}} \times 100\% \\ &= \frac{160,55g}{371,98} \times 100\% \\ &= 43,16\%\end{aligned}$$

2. Maserasi

Berat serbuk = 371,98 g

Etanol = 2,603 mL

Lampiran 2. Perhitungan Penimbangan Bahan

Formula I

- | | | |
|----|-----------------------|--|
| 1. | Ekstrak kulit manggis | $\frac{2,5}{100} \times 100 \text{ gram} = 2,5 \text{ gram}$ |
| 2. | Gelatin | $\frac{13}{100} \times 100 \text{ gram} = 13 \text{ gram}$ |
| 3. | Asam sitrat | $\frac{0,2}{100} \times 100 \text{ gram} = 0,2 \text{ gram}$ |
| 4. | Fruktosa sirup | $\frac{40}{100} \times 100 \text{ gram} = 40 \text{ gram}$ |
| 5. | Essens anggur | qs |
| 6. | Aquadest | Ad 100 mL |

Formula II

- | | | |
|----|-----------------------|--|
| 1. | Ekstrak kulit manggis | $\frac{5}{100} \times 100 \text{ gram} = 5 \text{ gram}$ |
| 2. | Gelatin | $\frac{13}{100} \times 100 \text{ gram} = 13 \text{ gram}$ |
| 3. | Asam sitrat | $\frac{0,2}{100} \times 100 \text{ gram} = 0,2 \text{ gram}$ |
| 4. | Fruktosa sirup | $\frac{40}{100} \times 100 \text{ gram} = 40 \text{ gram}$ |
| 5. | Essens anggur | qs |
| 6. | Aquadest | Ad 100 mL |

Formula III

- | | | |
|----|-----------------------|--|
| 1. | Ekstrak kulit manggis | $\frac{7,5}{100} \times 100 \text{ gram} = 7,5 \text{ gram}$ |
| 2. | Gelatin | $\frac{13}{100} \times 100 \text{ gram} = 13 \text{ gram}$ |
| 3. | Asam sitrat | $\frac{0,2}{100} \times 100 \text{ gram} = 0,2 \text{ gram}$ |
| 4. | Fruktosa sirup | $\frac{40}{100} \times 100 \text{ gram} = 40 \text{ gram}$ |
| 5. | Essens anggur | qs |
| 6. | Aquadest | Ad 100mL |

Lampiran 3. Perhitungan Uji Kadar Air

A = Berat cawan crush kosong

B = Berat cawan crush + sampel basah

C = Berat cawan crush + sampel kering

Formula I

Replikasi 1	Replikasi 2	Replikasi 3
A = 36,915 gram	A = 34,562 gram	A = 33,590 gram
B = 41,895 gram	B = 39,526 gram	B = 38,546 gram
C = 40, 875 gram	C = 38,009 gram	C = 37,125 gram

$$R1 \quad \frac{(B-A)-(C-A)}{B-A} \times 100\%$$

$$\frac{(41,895-36,915)-(40,875-36,915)}{41,895-36,915} \times 100\%$$

$$= \frac{4,98-3,96}{4,98} \times 100\%$$

$$= \frac{1,02}{4,98} \times 100\% = 20\%$$

$$R2 \quad \frac{(B-A)-(C-A)}{B-A} \times 100\%$$

$$\frac{(39,526-34,526)-(38,009-34,526)}{39,526-34,526} \times 100\%$$

$$= \frac{4,964-3,447}{4,964} \times 100\% = 30\%$$

$$= \frac{1,517}{4,964} \times 100\% = 30\%$$

$$R3 \quad \frac{(B-A)-(C-A)}{B-A} \times 100\%$$

$$\begin{aligned}
& \frac{(38,546-33,590)-(37,125-33,590)}{38,546-33,590} \times 100\% \\
&= \frac{4,956-3,535}{4,956} \times 100\% \\
&= \frac{1,421}{4,956} \times 100\% = 28\%
\end{aligned}$$

Formula II

Replikasi 1	Replikasi 2	Replikasi 3
A = 38,484 gram	A = 34,375 gram	A = 36,087 gram
B = 43,423 gram	B = 39,316 gram	B = 41,036 gram
C = 42,547 gram	C = 38,264 gram	C = 40,060 gram

$$\begin{aligned}
R1 \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
& \frac{(43,423-38,484)-(42,547-38,484)}{43,423-38,484} \times 100\% \\
&= \frac{4,939-4,063}{4,939} \times 100\% \\
&= \frac{0,876}{4,939} \times 100\% = 17\%
\end{aligned}$$

$$\begin{aligned}
R2 \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
& \frac{(39,316-34,375)-(38,264-34,375)}{39,316-34,375} \times 100\% \\
&= \frac{4,941-3,889}{4,941} \times 100\% \\
&= \frac{0,876}{4,939} \times 100\% = 21\%
\end{aligned}$$

$$\begin{aligned}
 R3 \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
 & \frac{(41,036-36,087)-(40,060-36,087)}{41,036-36,087} \times 100\% \\
 & = \frac{4,949-3,973}{4,949} \times 100\% \\
 & = \frac{0,976}{4,949} \times 100\% = 19\%
 \end{aligned}$$

Formula III

Replikasi 1	Replikasi 2	Replikasi 3
A = 37,452 gram	A = 37,300 gram	A = 37,452 gram
B = 42,395 gram	B = 42,216 gram	B = 42,395 gram
C = 41,319 gram	C = 41,261 gram	C = 41,815 gram

$$\begin{aligned}
 R1 \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
 & \frac{(42,395-37,452)-(41,319-37,452)}{42,395-37,452} \times 100\% \\
 & = \frac{4,943-3,867}{4,943} \times 100\% \\
 & = \frac{1,076}{4,943} \times 100\% = 21\%
 \end{aligned}$$

$$\begin{aligned}
 R2 \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
 & \frac{(42,216-37,300)-(41,261-37,300)}{42,216-37,300} \times 100\% \\
 & = \frac{4,916-3,961}{4,916} \times 100\% \\
 & = \frac{0,955}{4,916} \times 100\% = 19\%
 \end{aligned}$$

$$\begin{aligned}
 \text{R3} \quad & \frac{(B-A)-(C-A)}{B-A} \times 100\% \\
 & \frac{(42,395-37,452)-(41,815-37,452)}{42,395-37,452} \times 100\% \\
 & = \frac{4,943-4,363}{4,943} \times 100\% \\
 & = \frac{0,58}{4,943} \times 100\% = 11\%
 \end{aligned}$$

Lampiran 4. Perhitungan Uji Kadar Abu

A = Berat cawan crush kosong

B = Berat cawan crush + Sampel

C = Berat cawan crush + Abu

Formula I

Replikasi 1	Replikasi 2	Replikasi 3
A = 36,915 gram	A = 34,562 gram	A = 33,590 gram
B = 41,895 gram	B = 39,526 gram	B = 38,546 gram
C = 37,004 gram	C = 34,661 gram	C = 33,682 gram

$$\begin{aligned}
 R1 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(37,004-36,915)}{(41,895-36,915)} \times 100\% \\
 & = \frac{0,089}{4,98} \times 100\% \\
 & = 0,0178 \times 100\% = 1,78\%
 \end{aligned}$$

$$\begin{aligned}
 R2 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(34,661-34,562)}{(39,526-34,562)} \times 100\% \\
 & = \frac{0,099}{4,964} \times 100\% \\
 & = 0,0199 \times 100\% = 1,99\%
 \end{aligned}$$

$$\begin{aligned}
 R3 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(33,682-33,590)}{(38,546-33,590)} \times 100\%
 \end{aligned}$$

$$= \frac{0,092}{4,956} \times 100\%$$

$$= 0,0185 \times 100\% = 1,85\%$$

Formula II

Replikasi 1	Replikasi 2	Replikasi 3
A = 38,484 gram	A = 34,375 gram	A = 36,087 gram
B = 43,423 gram	B = 39,316 gram	B = 41,036 gram
C = 38,583 gram	C = 34,471 gram	C = 36,185 gram

$$\begin{aligned} \text{R1 } & \frac{(C-A)}{(B-A)} \times 100\% \\ & \frac{(38,583-38,484)}{(43,423-38,484)} \times 100\% \\ & = \frac{0,099}{4,939} \times 100\% \\ & = 0,0200 \times 100\% = 2,00\% \end{aligned}$$

$$\begin{aligned} \text{R2 } & \frac{(C-A)}{(B-A)} \times 100\% \\ & \frac{(34,471-34,375)}{(39,316-34,375)} \times 100\% \\ & = \frac{0,096}{4,941} \times 100\% \\ & = 0,0194 \times 100\% = 1,94\% \end{aligned}$$

$$\begin{aligned} \text{R3 } & \frac{(C-A)}{(B-A)} \times 100\% \\ & \frac{(36,185-36,087)}{(41,036-36,087)} \times 100\% \\ & = \frac{0,098}{4,949} \times 100\% \end{aligned}$$

$$= 0,0198 \times 100\% = 1,98\%$$

Formula III

Replikasi 1	Replikasi 2	Replikasi 3
A = 37,452 gram	A = 37,300 gram	A = 37,452 gram
B = 42,395 gram	B = 42,216 gram	B = 42,395 gram
C = 38,187 gram	C = 37,398 gram	C = 37,551 gram

$$\begin{aligned}
 R1 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(37,545-37,452)}{(42,395-37,452)} \times 100\% \\
 & = \frac{0,093}{4,943} \times 100\% \\
 & = 0,0188 \times 100\% = 1,88\%
 \end{aligned}$$

$$\begin{aligned}
 R2 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(37,398-37,300)}{(42,216-37,300)} \times 100\% \\
 & = \frac{0,098}{4,916} \times 100\% \\
 & = 0,0199 \times 100\% = 1,99\%
 \end{aligned}$$

$$\begin{aligned}
 R3 \quad & \frac{(C-A)}{(B-A)} \times 100\% \\
 & \frac{(37,551-37,452)}{(42,395-37,452)} \times 100\% \\
 & = \frac{0,099}{4,943} \times 100\% \\
 & = 0,0200 \times 100\% = 2,00\%
 \end{aligned}$$

Lampiran 5. Perhitungan Media

1. Media NA

Literatur dalam kemasan : 20 gram / 1 liter (dibuat 150 mL)

$$\text{Serbuk Na} = \frac{20}{1000} \times \frac{x}{300}$$

$$1000x = 600$$

$$x = \frac{600}{1000}$$

$$= 6 \text{ gram (Aquadest ad 300 mL)}$$

2. Media BHI

Literatur dalam kemasan : 37 gram / 1 liter (dibuat 150 mL)

$$\text{Serbuk Na} = \frac{37}{1000} \times \frac{x}{300}$$

$$1000x = 11,10$$

$$x = \frac{11,10}{1000}$$

$$= 11,1 \text{ gram (Aquadest ad 300 mL)}$$

3. Media MHA

Literatur dalam kemasan : 38 gram / 1 liter (dibuat 150 mL)

$$\text{Serbuk Na} = \frac{38}{1000} \times \frac{x}{300}$$

$$1000x = 11,40$$

$$x = \frac{11,40}{1000}$$

$$= 11,4 \text{ gram (Aquadest ad 300 mL)}$$

Lampiran 6. Gambar Pembuatan Ekstrak kulit manggis

Gambar	Keterangan
	Penguapan menggunakan evaporator
	Hasil ekstrak kulit manggis

Lampiran 7. Gambar Uji Flavonoid

Gambar	Keterangan
	Hasil uji flavonoid

Lampiran 8. Gambar Pembuatan Sediaan Permen Jelly

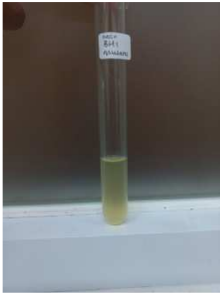
Gambar	Keterangan
	Menimbang ekstrak kulit manggis
	Gelatin

	Asam sitrat
	Fruktosa syrup
	Hasil sediaan permen <i>jelly</i>

Lampiran 9. Gambar Uji Fisik Permen *Jelly*

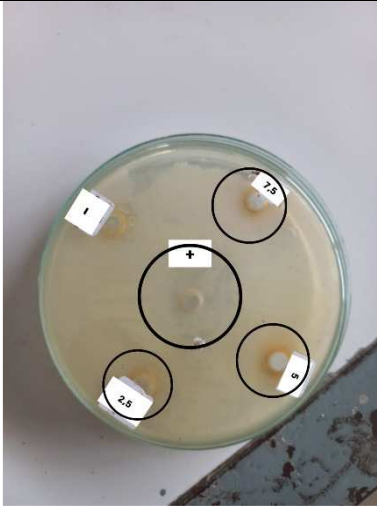
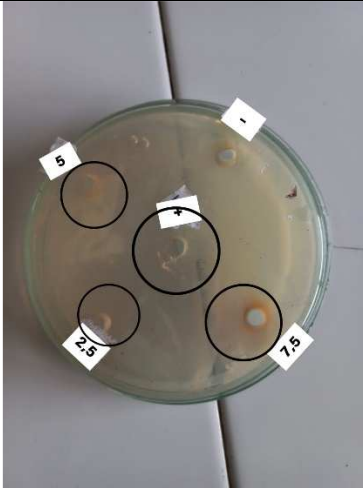
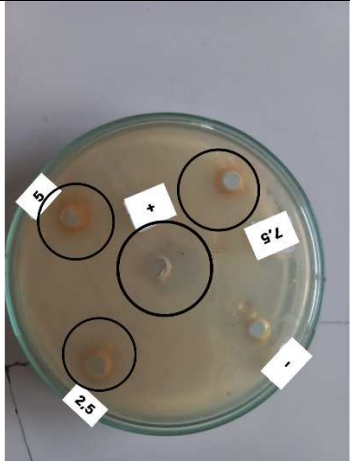
Gambar	Keterangan
	Uji pH
	Uji Kadar Air
	Uji Kadar Abu

Lampiran 10. Gambar Uji Antibakteri

Gambar	Keterangan
	Semua alat yang akan digunakan untuk uji antibakteri disterilkan
	BHI
	NA
	Menanam bakteri di media MHA

	Setelah dibuat lubang sumuran masukan ketiga formula dan kontrol negative dan positif menggunakan mikropipet
	Inkubasi selama 24 jam disuhu 37°C

Hasil zona bening yang terbentuk:

Replikasi I	Replikasi II	Replikasi III
		



No : 088.06/FAR.PHB/VII/2025
Hal : Keterangan Praktek Laboratorium

SURAT KETERANGAN

Dengan ini menerangkan bahwa mahasiswa berikut :

Nama : Nina Ariana
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Judul Tugas Akhir : Formulasi Permen Jelly Dari Ekstrak Etanol Kulit Buah Manggis (*Garcinia mangostana* L) Terhadap Bakteri *Streptococcus mutans*

Benar – benar telah melakukan penelitian di Laboratorium Diploma III Farmasi Politeknik Harapan Bersama Tegal.

Demikian surat keterangan ini untuk digunakan sebagaimana mestinya.

Tegal, 14 Juli 2025

Ka. Program Studi Diploma III Farmasi

Politeknik Harapan Bersama



[Signature]
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CURICULUM VITAE



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 Judul TA : Formulasi Permen *Jelly* Dari Ekstrak Etanol Kulit
 Buah Manggis (*Garcinia mangostana* L) terhadap
 bakteri *Streptococcus mutans*.

Tegal, 6 Juni 2024

Mahasiswa

Nina Ariana

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