

LAMPIRAN

A. LAMPIRAN PERHITUNGAN PENELITIAN

1. Mencari Kadar Air Bobot Basah

Bobot basah = 2039 gram

Bobot kering = 135 gram

$$\begin{aligned}\% \text{ Kadar air} &= \frac{\text{Bobot basah} - \text{Bobot kering}}{\text{Bobot basah}} \times 100\% \\ &= \frac{2039 \text{ gram} - 135 \text{ gram}}{2039 \text{ gram}} \times 100\% \\ &= 93,38 \% \text{ basah}\end{aligned}$$

2. Mencari Rendemen Ekstrak Metanol (Depkes RI, 2000)

Bobot ekstrak kental = 0,6 gram dari 1,2 L filtrat

Bobot simplisia awal = 135 gram

$$\begin{aligned}\% \text{ Rendemen} &= \frac{\text{Bobot ekstrak kental}}{\text{Bobot simplisia awal}} \times 100\% \\ &= \frac{0,6 \text{ gram}}{135 \text{ gram}} \times 100\% \\ &= 0,4 \%\end{aligned}$$

3. Jumlah filtrat

Filtrat hari pertama (12/05/2023) = 780 ml

Filtrat hari kedua (13/05/2023) = 830 ml

Filtrat hari ketiga (14/05/2023) = 810 ml

Jumlah filtrat = 2420 ml atau 2,42 L

4. Mencari LC₅₀

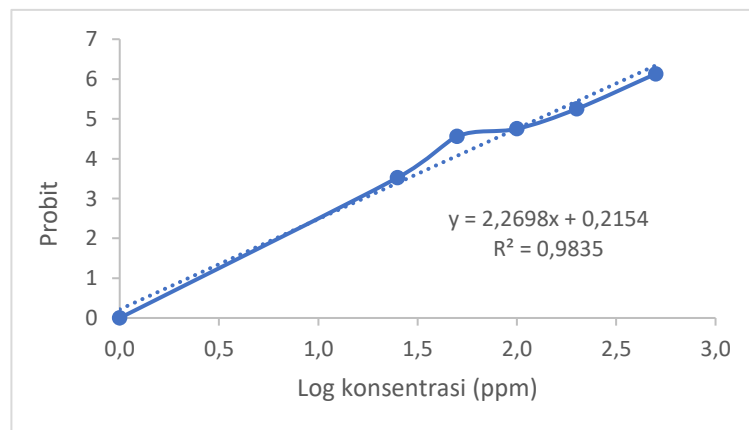
Konsentrasi (ppm)	Log Konsentrasi	Probit	% kematian	Larva mati	Jumlah larva Uji (ekor)
0	0,0	0	0	0	15
5	0,7	0	0	0	15
10	1,0	0	0	0	15
25	1,4	3,52	7	1	15
50	1,7	4,56	33	5	15
100	2,0	4,75	40	6	15
200	2,3	5,25	60	9	15
500	2,7	6,13	87	13	15

Nilai probit didapatkan dari tabel berikut:

Table 3.2 Transformation of percentages to probits

%	0	1	2	3	4	5	6	7	8	9
0	—	2.67	2.95	3.12	3.25	3.36	3.45	3.52	3.59	3.66
10	3.72	3.77	3.82	3.87	3.92	3.96	4.01	4.05	4.08	4.12
20	4.16	4.19	4.23	4.26	4.29	4.33	4.36	4.39	4.42	4.45
30	4.48	4.50	4.53	4.56	4.59	4.61	4.64	4.67	4.69	4.72
40	4.75	4.77	4.80	4.82	4.85	4.87	4.90	4.92	4.95	4.97
50	5.00	5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23
60	5.25	5.28	5.31	5.33	5.36	5.39	5.41	5.44	5.47	5.50
70	5.52	5.55	5.58	5.61	5.64	5.67	5.71	5.74	5.77	5.81
80	5.84	5.88	5.92	5.95	5.99	6.04	6.08	6.13	6.18	6.23
90	6.28	6.34	6.41	6.48	6.55	6.64	6.75	6.88	7.05	7.33
—	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
99	7.33	7.37	7.41	7.46	7.51	7.58	7.65	7.75	7.88	8.09

Lalu dilakukan pemplotan antara nilai probit dengan log konsentrasi untuk mendapatkan persamaan linear, sebagai berikut:



Didapatkan persamaan $y = 2,2698x + 0,2154$, dimana $y = 5$ yang menyatakan nilai probit dari 50% mortalitas, sehingga :

$$x = \frac{y - 0,2154}{2,2698}$$

$$x = \frac{5 - 0,2154}{2,2698}$$

$$x = 2,11$$

$$LC_{50} = \text{antilog} = 10^x = 10^{2,11} = 128,22 \text{ ppm}$$

B. LAMPIRAN DATA PENDUKUNG

Hasil GC-MS *Enhalus acoroides*

FR-20.2-LT-1.0	LABORATORY TEST REPORT	Page 2 of 2
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Certificate No. : LT-10-23-0780 Received Date : 19-06-2023
 Laboratory No. : BM/V/23/1575 Finished Date : 11-07-2023
 Sampel Matrix : Material*
 Sampel Id : Enhalus acoroides

Parameter*	Result	Unit	Method
<i>Profil GC-MS**</i>			
Butane, 2,2-dimethyl-	8.33	%Area	GC-MS
Biisopropyl	18.89	%Area	GC-MS
Isohexane	12.40	%Area	GC-MS
3-Methylpentane	19.07	%Area	GC-MS
Cyclohexane	7.01	%Area	GC-MS
2-Methoxytetrahydrofuran	2.43	%Area	GC-MS
Decane	2.38	%Area	GC-MS
Undecane	2.02	%Area	GC-MS
Benzyl Benzoate	27.46	%Area	GC-MS
TOTAL	100.00	%Area	GC-MS
REMARKS: *) Outside the scope of accreditation **) in extract Methanol Laboratory is not responsible for the sampling process			

July 18, 2023
 Head of Laboratory,

Dr. Mohammad Khotib, M.Si
 NIP. 19781018 200701 1 002

Hasil GC-MS Berdasarkan Jurnal (Amudha, 2018)

Retention time	Name of the compound	Molecular formula	Molecular weight	Peak%
5.04	o-Xylene	C ₁₀ H ₁₀	106	3.16
13.89	Phenol, 2,4-bis (1,1-dimethylethyl)-	C ₁₄ H ₂₂ O	206	1.94
17.16	1-Nonadecene	C ₁₉ H ₃₈	266	10.06
17.16	1-Octadecene	C ₁₈ H ₃₆	252	10.06
17.16	1-Hexadecanol	C ₁₆ H ₃₄ O	242	10.06
17.67	2-Pentadecanone, 6,10,14-trimethyl-	C ₁₈ H ₃₆ O	268	7.87
18.33	Butylated hydroxytoluene	C ₁₆ H ₂₄ O	220	2.09
18.33	Phenol, 2,6-bis (1,1-dimethylethyl)- 4-methyl-, methyl carbamate	C ₂₇ H ₂₇ NO ₂	277	2.09
19.19	1-Heneicosanol	C ₂₁ H ₄₄ O	312	17.15
19.19	1-Docosene	C ₂₂ H ₄₄	308	17.15
20.20	Heptadecane, 9-hexyl-	C ₂₄ H ₄₈	324	1.57
20.20	Octadecane, 3-ethyl-5-(2-ethylbutyl)-	C ₂₆ H ₅₄	366	1.57
21.05	n-Tetracosanol-1	C ₂₄ H ₅₀ O	354	11.48
21.05	Behenyl alcohol	C ₂₂ H ₄₆ O	326	11.48
24.35	17-Pentatriacontene	C ₃₅ H ₇₀	490	4.84
24.35	Cyclopentane, (4-octylododecyl)-	C ₂₆ H ₅₀	350	4.84
25.13	Heptadecane, 9-hexyl-	C ₂₄ H ₄₈	324	1.57
25 0.13	Pentadecane, 2-methyl-	C ₁₆ H ₃₄	226	1.57
25.85	Tetratetracontane	C ₂₄ H ₅₀	618	4.17
25.85	Heptacosane	C ₂₇ H ₅₆	380	4.17
26.56	Pentacosane	C ₂₅ H ₅₂	352	3.24
27.24	Heneicosane	C ₂₁ H ₄₄	296	4.25
28.01	Octadecane, 3-ethyl-5-(2-ethylbutyl)-	C ₂₆ H ₅₄	366	3.97
30.16	á-Sitosterol	C ₂₈ H ₅₀ O	414	1.85
33.18	Haloxazolam	C ₁₇ H ₁₄ BrFN ₂ O ₂	376	2.70
33.18	Lanosterol	C ₃₀ H ₅₀ O	426	2.70
33.78	Pregn-16-en-20-one, 3-hydroxy-, (3á,5á)-	C ₃₀ H ₅₀ O ₂	316	6.34
33.78	Nitralin	C ₁₅ H ₁₉ N ₂ O ₆ S	345	6.34
33.78	Benzamide, N, N'-1,4-phenylenebis-	C ₂₀ H ₁₆ N ₂ O ₂	316	6.34

E. acoroides: *Enhalus acoroides*, GC-MS: Gas chromatography-mass spectroscopy

Tabel Nilai Sifat Fisikokimia Senyawa dari *Bioavailability Radar*

Sifat	Parameter	<i>Phenol</i>	<i>Butylated</i>	<i>Lanosterol</i>	<i>Benzamide</i>
LIPO	$-0,7 < XLOGP < +5$	5,19	5,10	8,91	3,72
SIZE	150 <MW<500 g/mol	206,32 g/mol	220,35 g/mol	426,72 g/mol	316,35 g/mol
POLAR	$20 \text{ \AA}^2 < \text{TPSA} < 130 \text{ \AA}^2$	20,23 \AA^2	20,23 \AA^2	20,23 \AA^2	58,20 \AA^2
INSOLU	$-6 < \text{Log S (ESOL)} < 0$	-4,55	-4,56	-7,83	-4,30
INSATU	$0,25 < \text{Fraction Csp3} < 1$	0,57	0,60	0,87	0
FLEX	<i>rotatable bond</i> ≤ 10	2	2	4	6

Tabel Sifat *Drug-likeness* Senyawa

Senyawa	<i>Drug-likeness</i>			
	Lipinski*	Ghose**	Veber***	<i>Bioavailability Score****</i>
<i>Phenol, 2,4-bis (1,1-dimethylethyl)-</i>	Yes	Yes	Yes	0,55
<i>Butylated hydroxytoluene</i>	Yes	Yes	Yes	0,55
<i>Lanosterol</i>	Yes; 1 violation: MLOGP>4,15	No: 3 violations: WLOGP>5.6, MR>130, atoms>70	Yes	0,55
<i>Benzamide, N, N'-1,4-phenylenebis</i>	Yes	Yes	Yes	0,55

Keterangan:

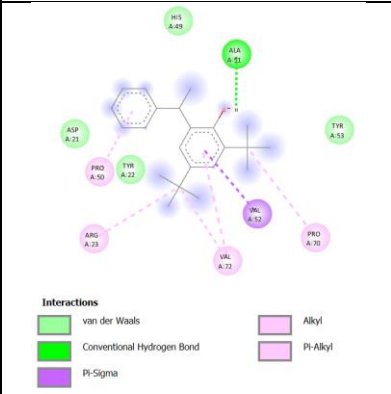
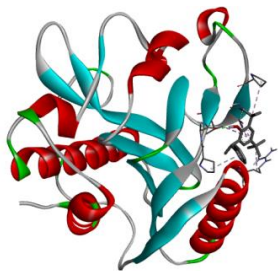
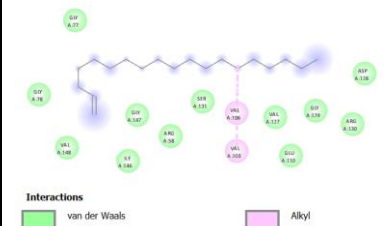
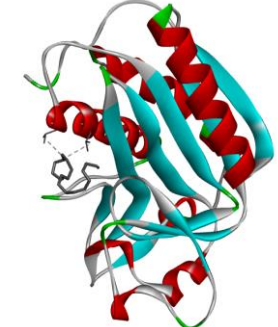
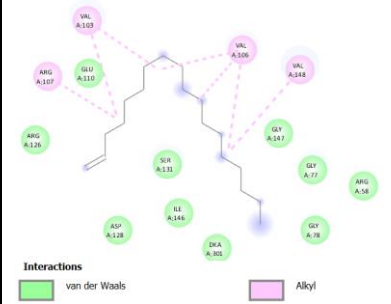

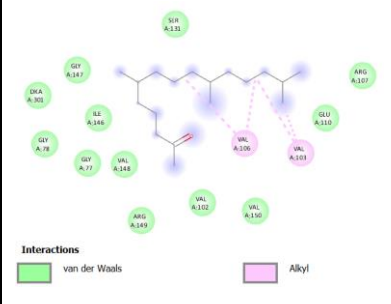
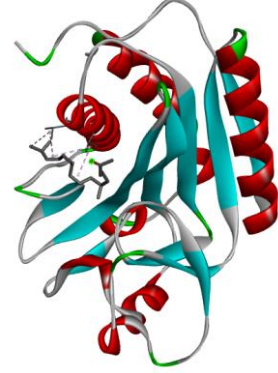
*aturan Lipinski; $MW \leq 500$; $MLOGP \leq 4,15$; N or $O \leq 10$; NH or $OH \leq 5$

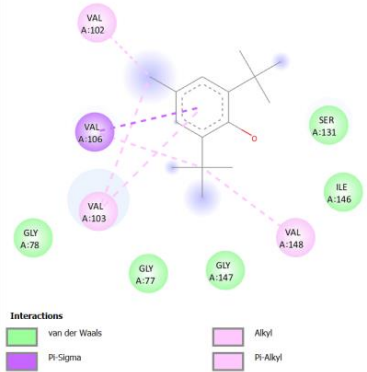
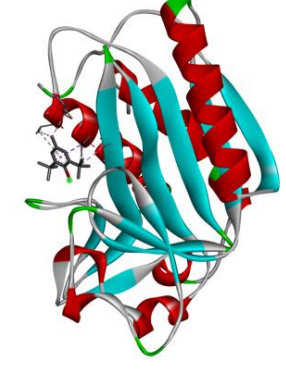
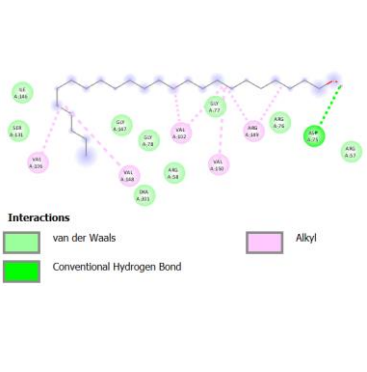
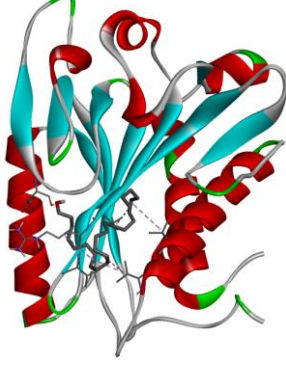
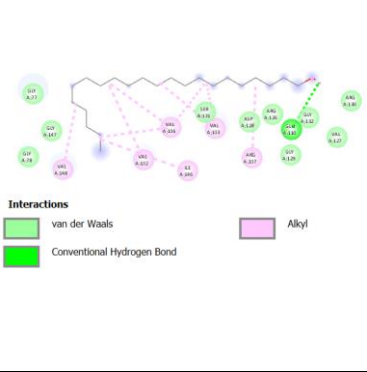
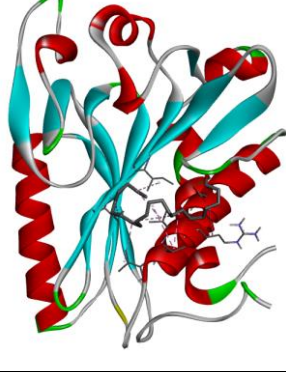
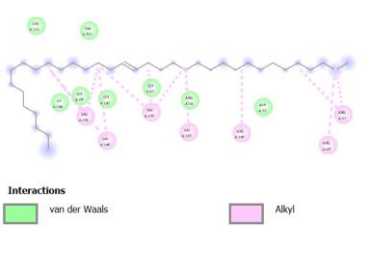
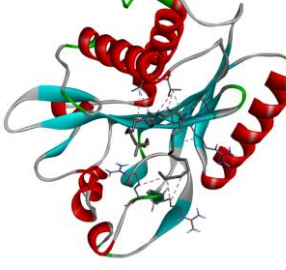
**aturan Ghose; $160 \leq MW \leq 480$; $-0,4 \leq WLOGP \leq 5,6$; $40 \leq MR \leq 130$; $20 \leq atoms \leq 70$


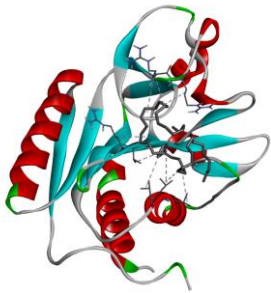
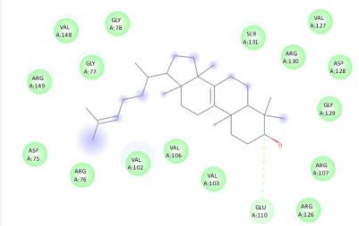
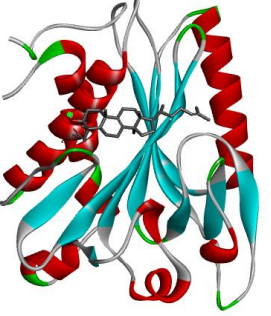
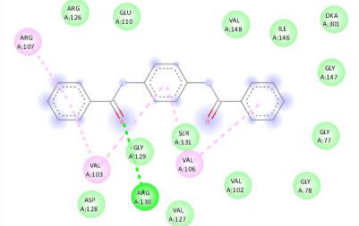
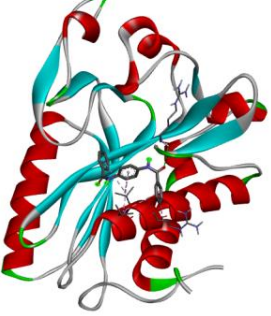
***aturan Veber; Rotatable bonds ≤ 10 ; $TPSA \leq 140$

****Probability of $F > 10\%$ in rat

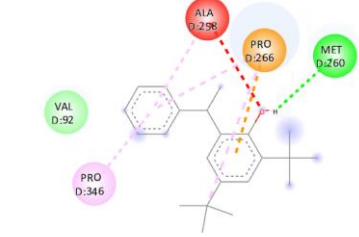
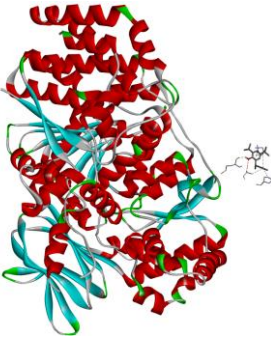
Tabel Visualisasi 2D dan 3D Interaksi Ligan dengan Reseptor 1W66

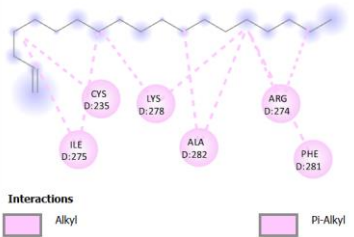
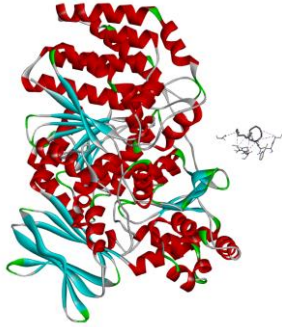
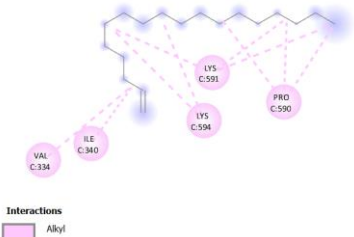
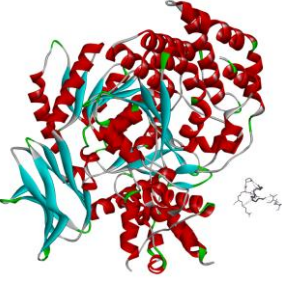
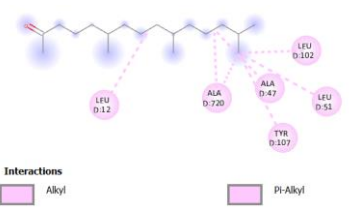
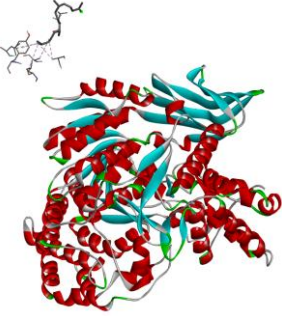
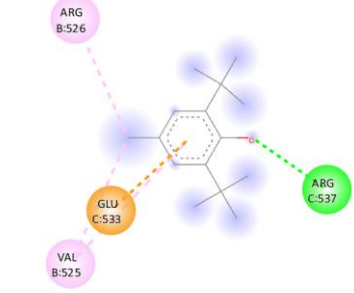

No	Ligan	Binding Visualization	
		2D Image	3D Image
1.	<i>Phenol, 2,4-bis(1,1-dimethylethyl)-</i>		
2.	<i>1-Nonadecene</i>		
3.	<i>1-Octadecene</i>		
4.	<i>2-Pentadecanone, 6, 10, 14-trimethyl-</i>		

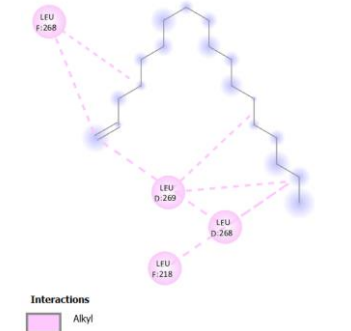
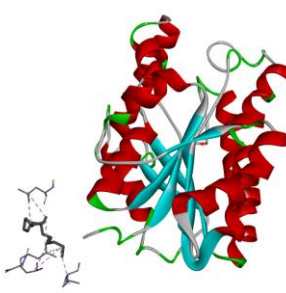
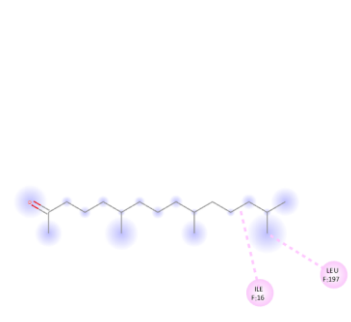
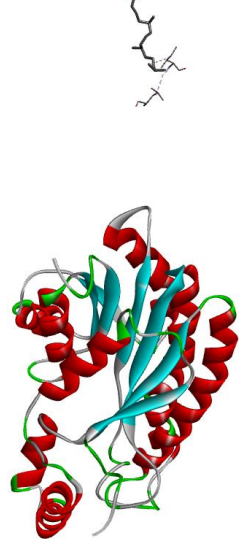
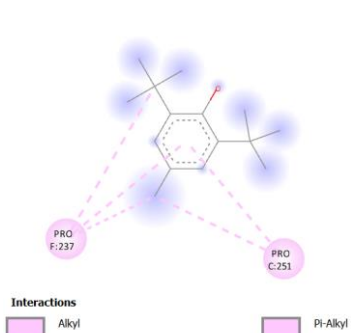
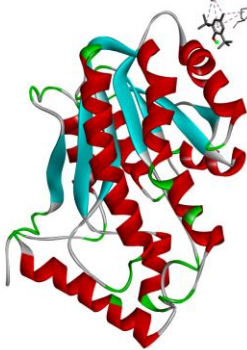
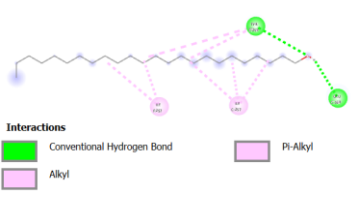
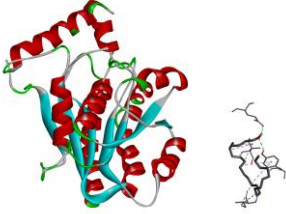
5.	<i>Butylated hydroxytoluene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Pi-Sigma Alkyl Pi-Alkyl 	
6.	<i>n-Tetracosanol-1</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Conventional Hydrogen Bond Alkyl 	
7.	<i>Behenyl alcohol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Conventional Hydrogen Bond Alkyl 	
8.	<i>17-Pentatriacontene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	

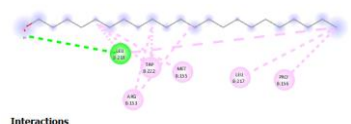
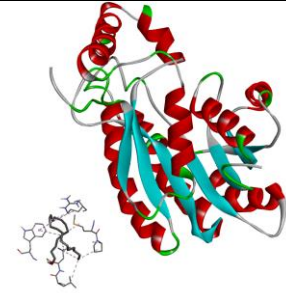

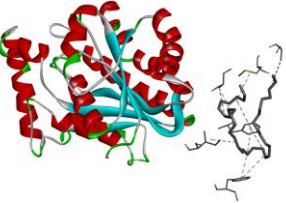
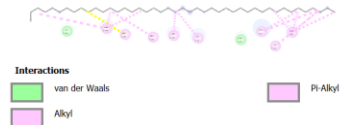

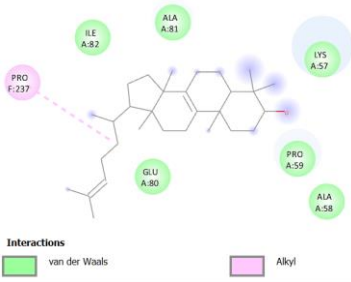
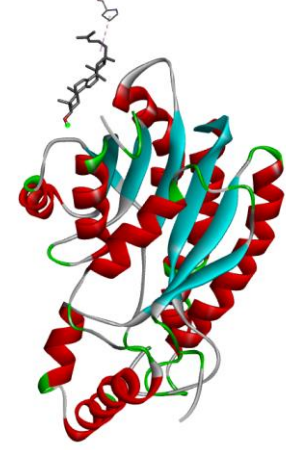
9.	<i>Tetratetracontane</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	
10.	<i>Lanosterol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Carbon Hydrogen Bond 	
11.	<i>Benzamide, N, N'-1,4-phenylenebis</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Conventional Hydrogen Bond Pi-Alkyl 	

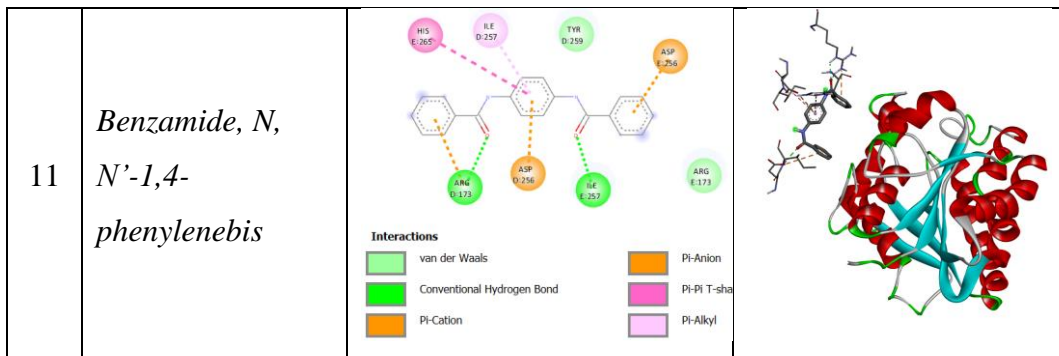
Tabel Visualisasi 2D dan 3D Interaksi Ligan dengan Reseptor 5KVU

No	Ligan	<i>Binding Visualization</i>	
		<i>2D Image</i>	<i>3D Image</i>
1.	<i>Phenol, 2,4-bis (1,1-dimethylethyl)-</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Conventional Hydrogen Bond Unfavorable Acceptor-Acceptor Pi-Cation Pi-Sigma Alkyl Pi-Alkyl 	

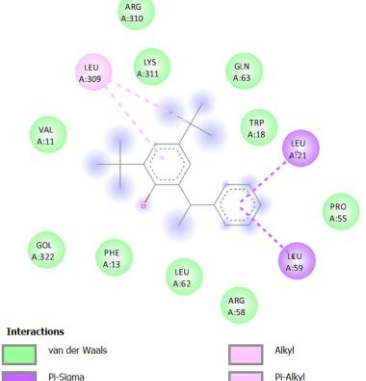

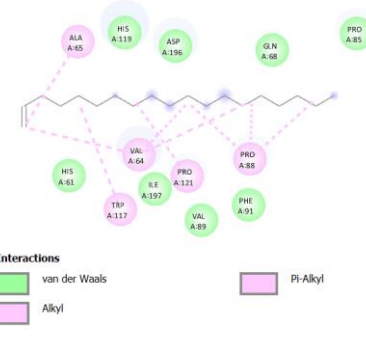
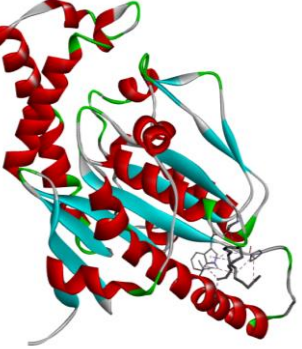
2.	<i>1-Nonadecene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl Pi-Alkyl 	
3.	<i>1-Octadecene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl 	
4.	<i>2-Pentadecanone, 6, 10, 14-trimethyl-</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl Pi-Alkyl 	
5.	<i>Butylated hydroxytoluene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Conventional Hydrogen Bond Pi-Anion Alkyl Pi-Alkyl 	

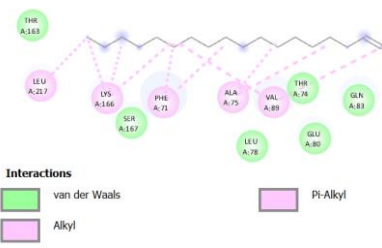
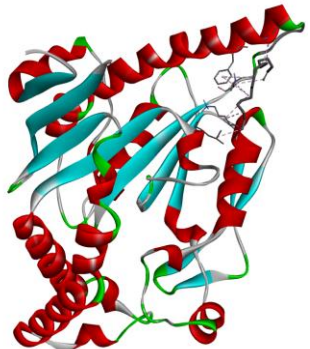
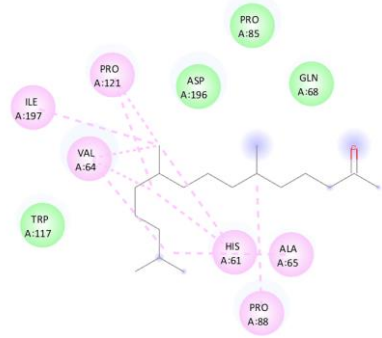
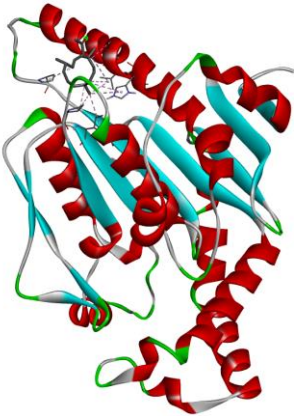
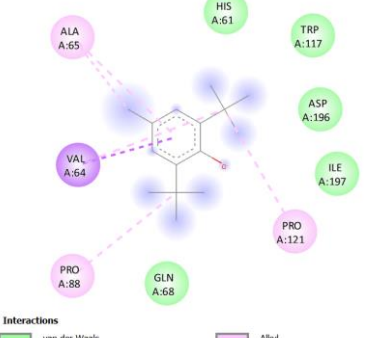
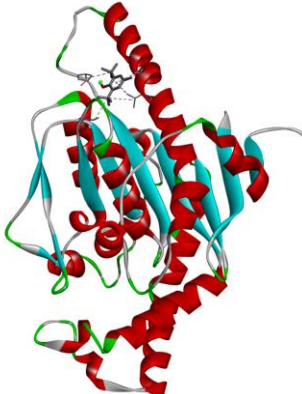
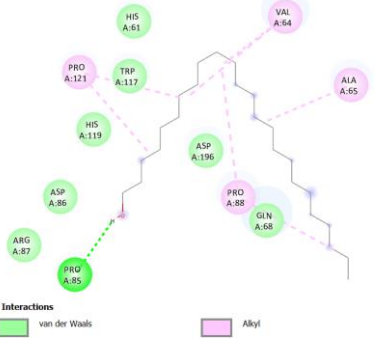
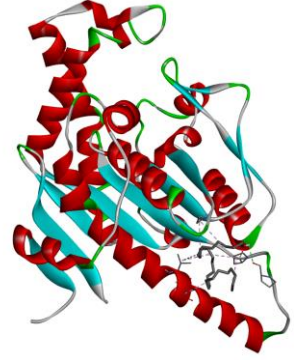
3.	<i>1-Octadecene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl 	
4.	<i>2-Pentadecanone, 6, 10, 14-trimethyl-</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl 	
5.	<i>Butylated hydroxytoluene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl Pi-Alkyl 	
6.	<i>n-Tetracosanol-1</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Conventional Hydrogen Bond Alkyl Pi-Alkyl 	

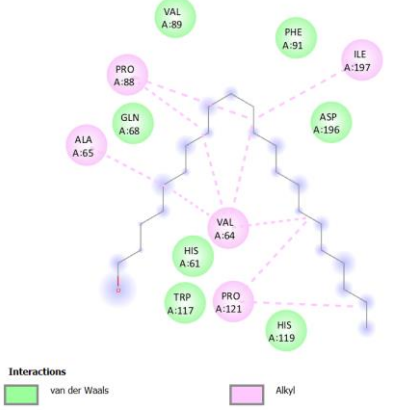
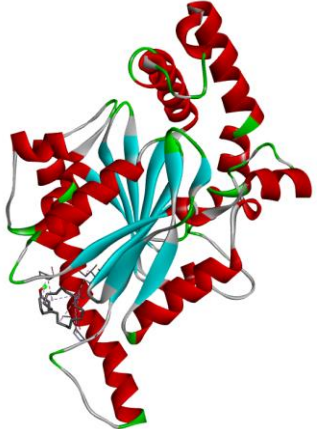
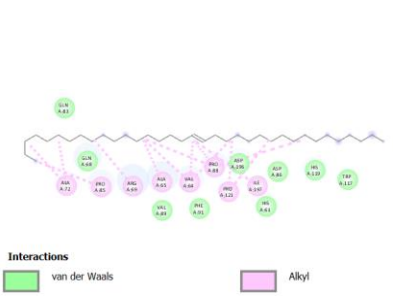
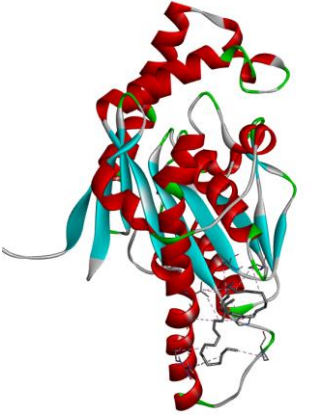
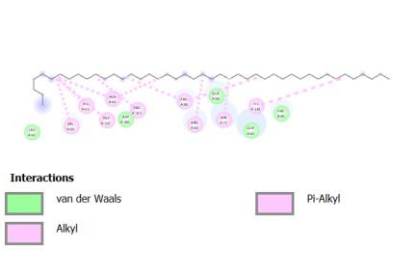
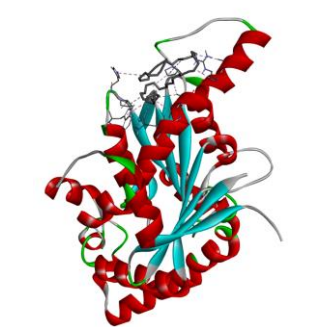
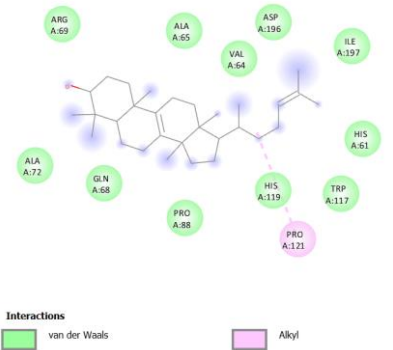
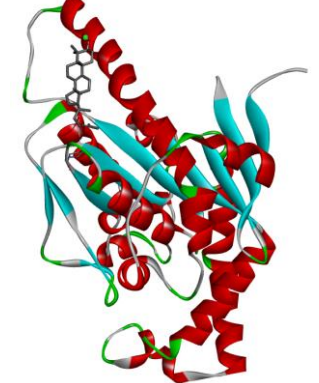
7.	<i>Behenyl alcohol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Conventional Hydrogen Bond Alkyl Pi-Alkyl 	
8.	<i>17-Pentatriacontene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> Alkyl Pi-Alkyl 	
9.	<i>Tetratetracontane</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl Pi-Alkyl 	
10	<i>Lanosterol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	



Tabel Visualisasi 2D dan 3D Interaksi Ligan dengan Reseptor 3AF3

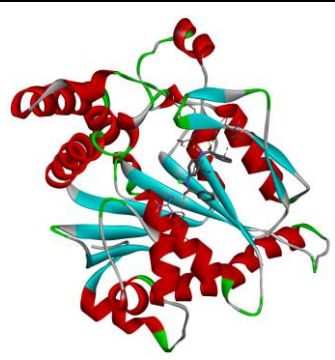
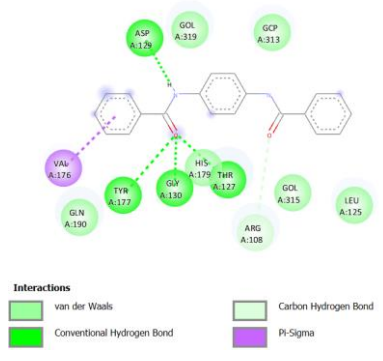
No	Ligan	Binding Visualization	
		2D Image	3D Image
1.	<i>Phenol, 2,4-bis (1,1-dimethylethyl)-</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Pi-Sigma Alkyl Pi-Alkyl 	
2.	<i>1-Nonadecene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl Pi-Alkyl 	

3.	<i>1-Octadecene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl Pi-Alkyl 	
4.	2- <i>Pentadecanone,</i> 6, 10, 14- <i>trimethyl-</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl Pi-Alkyl 	
5.	<i>Butylated</i> <i>hydroxytoluene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Pi-Sigma Alkyl Pi-Alkyl 	
6.	<i>n-Tetracosanol-1</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Conventional Hydrogen Bond Alkyl Pi-Alkyl 	

7.	<i>Behenyl alcohol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	
8.	<i>17-Pentatriacontene</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	
9.	<i>Tetratetracontane</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl Pi-Alkyl 	
10	<i>Lanosterol</i>	 <p>Interactions</p> <ul style="list-style-type: none"> van der Waals Alkyl 	

11

*Benzamide, N,
N'-1,4-
phenylenebis*



C. LAMPIRAN DOKUMENTASI PENELITIAN



Sampel basah *Enhalus acoroides*



Pengeringan *Enhalus acoroides*



Sampel kering *Enhalus acoroides*



Penghalusan *Enhalus acoroides*



Pengayakan *Enhalus acoroides*



Simplisia *Enhalus acoroides*



Pemurnian pelarut metanol



Ekstraksi maserasi



Filtrat hari ke-1



Filtrat hari ke-2



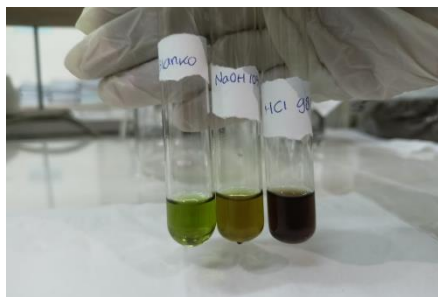
Filtrat hari ke-3



Rotary evaporator



Ekstrak *Enhalus acoroides*



Uji fitokimia (flavonoid)



Uji spektrofotometri UV-Vis



Udang *Artemia Salina L*



Uji BSLT