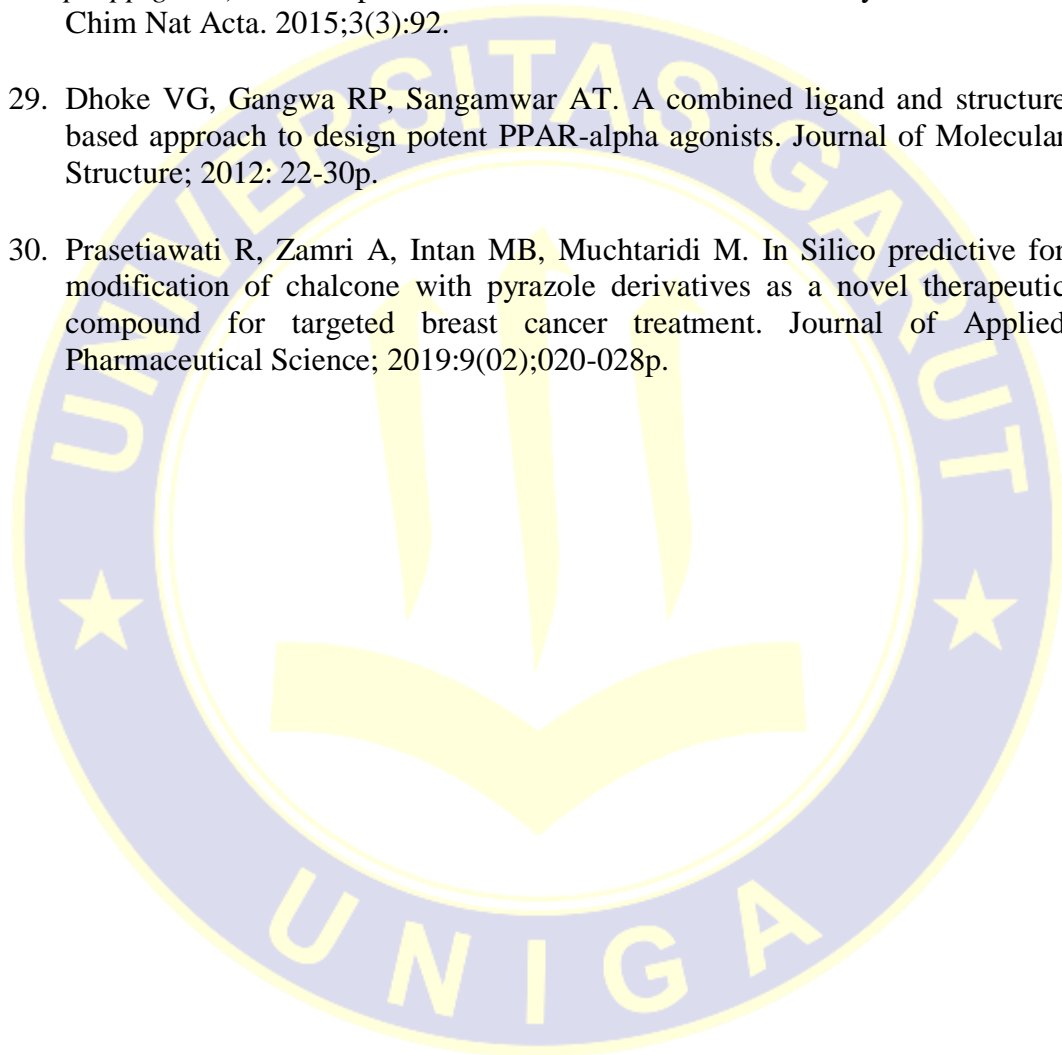


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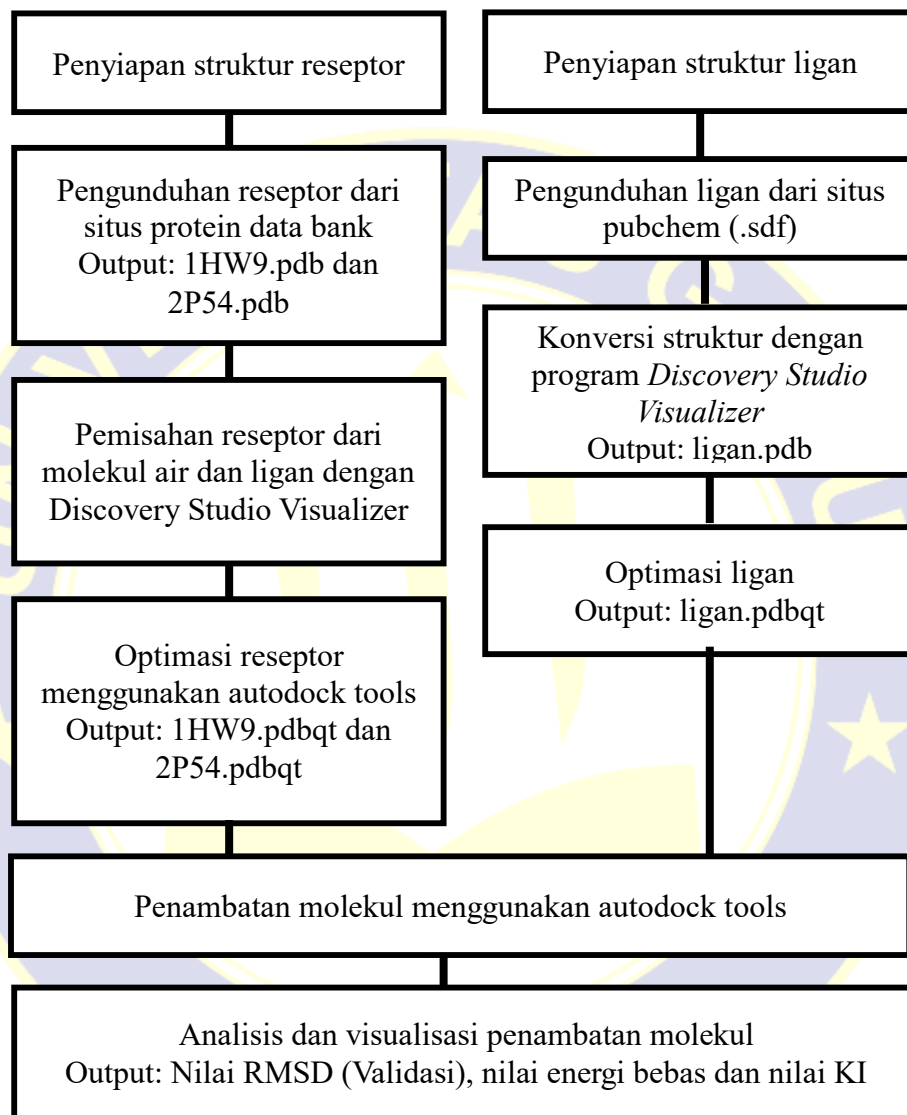
1. Heryani R. Pengaruh Ekstrak Buah Naga Merah Terhadap Profil Lipid Darah Tikus Putih Hiperlipidemia. *JURNAL IPTEKS TERAPAN Research of Applied Science and Education*. 2016;10;9p.
2. Erwinanto, Santoso A, Eko JNP, dkk. Pedoman Tatalaksana Dislipidemia Edisi Ketiga. *Centra Communication*: 2013;1-2p, 32-33p.
3. Yuniarti L, Kania MD, Ari UL, Bhatara T. Potensi Ekstrak Air Daun Sirsak Sebagai Penurun Kolesterol dan Pengendalian Bobot Badan. *Akta Veterinaria Indonesia*. 2016;4(2);82-83p.
4. Dharma S, Supanda O, Elisma. Pengaruh Ekstrak Etanoldaun Sirsak (*Annona muricata* L.) Terhadap Kadar LDL Pada Mencit Putih Jantan. *Jurnal Farmasi Higea*. 2014;6(1);68p.
5. Sovia E, Rahwita W, Wijayanti D, Novianti DR. Hypoglycemic And Hypolipidemic Effects Of *Annona Muricata* L. Leaf Ethanol Extract. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2017;9(3);173p.
6. David C, Michal H, Alexander B, Eran Hodis, Angel H, Joel LS. *Journal Biochemistry And Molecular Biologi Education: HMG CoA Reductase* [Internet]. 2010;23(Desember). Available from: https://proteopedia.org/wiki/index.php/HMG-CoA_Reductase
7. Vitali C & Cuchel M. Therapies Targeting HDLc Levels and HDL Function. *The HDL Handbook*. 2017; 263p.
8. Arry Y. Penambatan Molekular: Praktek dan Aplikasi Pada *Virtual Screening*. Depok: Fakultas Farmasi Universitas Indonesia; 2012: 8p, 16-17p, 43p, 47-48p.
9. BPOM RI. Sirsak *Annona muricata* L. Jakarta: Direktorat Obat Asli Indonesia BPOM RI; 2012: 1-5p.
10. Soheil ZM, Mehran F, Sonia N, Gokula M, Hapipah MA, Hasbah AK. *Annona muricata* (Annonaceaw): A Review of Its Traditional Uses, Isolated Acetogenin and Biological Activities. *International Journal of Molecular Science*. 2015;16;15628-15631p.
11. Marks DB., dkk. *Biokimia Kedokteran Dasar: Sebuah Pendekatan Klinis*. Jakarta: Penerbit EGC; 2000: 478-480p.

12. Yulinah ES, Andrajati R, Sigit JI, dkk. ISO farmakoterapi. Jakarta Barat: PT. ISFI Penerbitan; 2008: 107p, 115p.
13. Hoan TT, Rahadja K. Obat-Obat Penting Edisi VI. Jakarta: PT. Elex Media Komputindo; 2008: 571-572p, 579-580p.
14. Tanto C, Liwang F, Hanifati S, Pradipta EA. Kapita Selekta Kedokteran. Jakarta: Media Aesculapius; 2014: 783-785p.
15. Neal MJ. 2006. At a Glance Farmakologi Medis Edisi Kelima. Jakarta: Penerbit Erlangga; 2006: 47p.
16. Ikawati Z. Farmakologi Molekuler target Aksi Obat dan Mekanisme Molekulernya. Yogyakarta: Gadjah Mada University Press; 2015: 2-3
17. Harvey RA, Champe PC. Farmakologi Ulasan Bergambar. Jakarta: Penerbit EGC; 2016: 301p.
18. Lehninger AL. Dasar-dasar Biokimia. Alih badasa: Maggy Thenawidjaya. Jakarta: Penerbit Erlangga; 1982: 235p.
19. Poedjiadi A, Supriyanti T. Dasar-Dasar Biokimia. Jakarta: Universitas Indonesia Press; 2009: 83-85p.
20. Fessenden RJ, Fessenden JS. Kimia Organik Edisi Ketiga Jilid II. Jakarta: Penerbit Erlangga; 1986:363-368p.
21. Sarker SD dan Nahar L. Kimia Untuk Mahasiswa Farmasi Bahan Kimia Organik, Alam dan Umum. Yogyakarta: Pustaka Pelajar; 2009: 32-39p.
22. Mahmood AD, Mir S. Molecular Docking: Approaches, Types, Applications and Basic Challenges. Journal of Analytical & Bioanalytical Techniques. 2017;8(2);1 Doi : 10.4172/2155-9872.1000356
23. Nursamsiar, Tandi AT, Awaluddin A. Studi *In Silico* Senyawa Turunan Analog Kalkon Dan Pirimidin Sebagai Antiinflamasi : Prediksi Absorpsi, Distribusi, Dan Toksisitas. Pharmacy. 2016;13(1);95p.
24. Martinelli A. Introduction To The Discovery Studio Visualizer [Internet]. Available form: http://www.adrianomartinelli.it/Fondamenti/Tutorial_0.pdf.
25. Susanti NMP, Saputra DPD, Heryanti PL. Molecular Docking Likopen Sebagai Antiosteoporosis Secara In Silico. Jurnal Kimia. 2019;13(1);30p.

26. Yustika FP, Riza H, Fajriaty I. Studi Molecular Docking Hasil Modifikasi Struktur Senyawa Atorvastatin Untuk Meningkatkan Efek Antihiperlipidemia.
27. Kim R, Skolnick J. Assessment of Programs for Ligand Binding Affinity Prediction. *J Comput Chem*; 2008;1316-1331p.
28. Mardianingrum R, Herlina T, Supratman. Isolasi dan Molecular Docking Senyawa 6,7-dihidro-17-hidroksierisotrin Dari Daun Belendung (*Erythrina poeppigiana*) Terhadap Aktivitas Sitotoksik Antikanker Payudara MCF-7. *Chim Nat Acta*. 2015;3(3):92.
29. Dhoke VG, Gangwa RP, Sangamwar AT. A combined ligand and structure based approach to design potent PPAR-alpha agonists. *Journal of Molecular Structure*; 2012: 22-30p.
30. Prasetiawati R, Zamri A, Intan MB, Muchtaridi M. In Silico predictive for modification of chalcone with pyrazole derivatives as a novel therapeutic compound for targeted breast cancer treatment. *Journal of Applied Pharmaceutical Science*; 2019;9(02);020-028p.

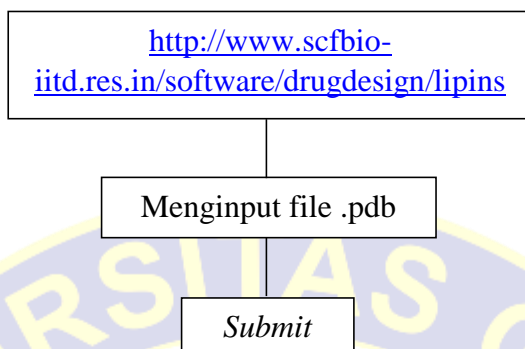


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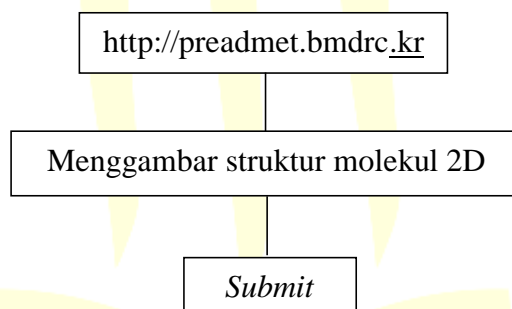


Gambar II.1 Alur Penelitian Penambatan Molekul

**LAMPIRAN 1
(LANJUTAN)**



Gambar II.2 Analisis *Lipinski Rule of Five*

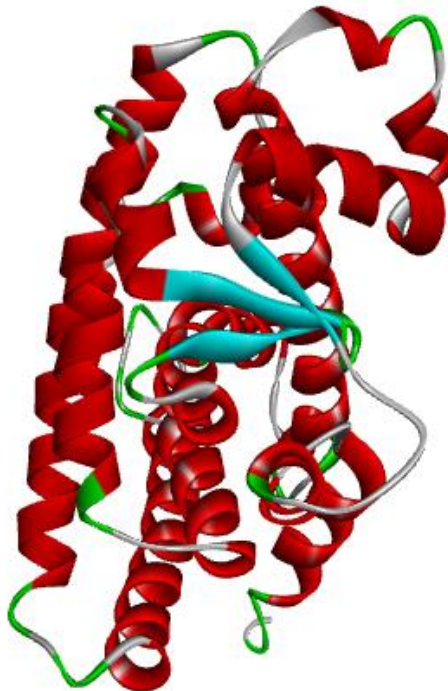


Gambar II.3 Analisis Pre-ADME dan Toksisitas

LAMPIRAN 2
STRUKTUR 3D MAKROMOLEKUL

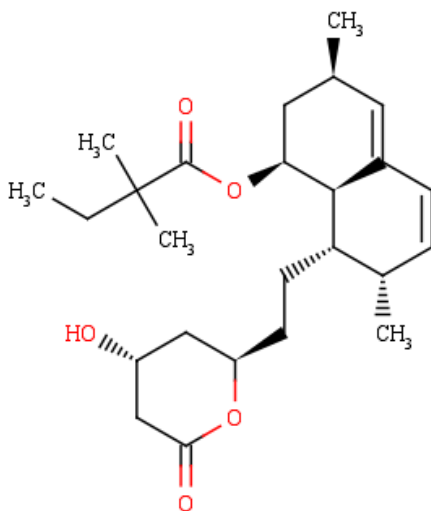


Gambar III.1 Enzim HMG CoA Reduktase dengan PDB ID 1HW9

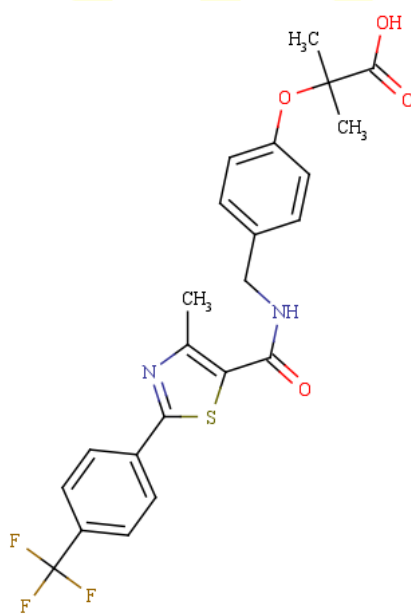


Gambar III.2 Reseptor PPAR α dengan PDB ID 2P54

LAMPIRAN 3
STRUKTUR 2D LIGAN ALAMI

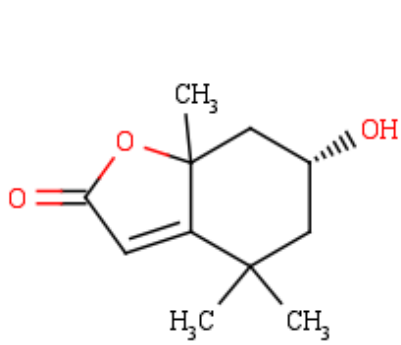


Gambar III.3 Ligan alami enzim HMG CoA reduktase

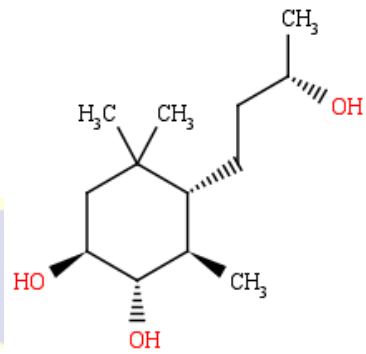


Gambar III.4 Ligan alami reseptor PPAR α

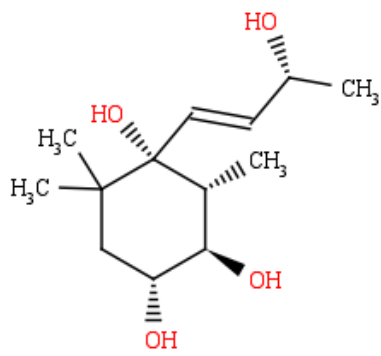
LAMPIRAN 4
STRUKTUR 2D LIGAN UJI



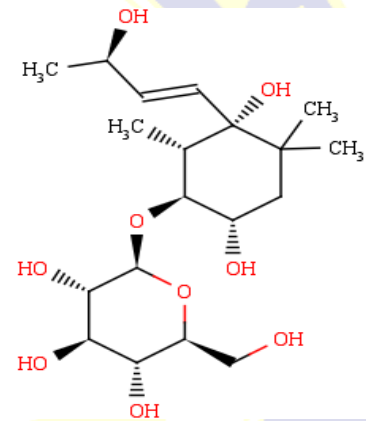
Gambar III.5 (+)-epiloliolide



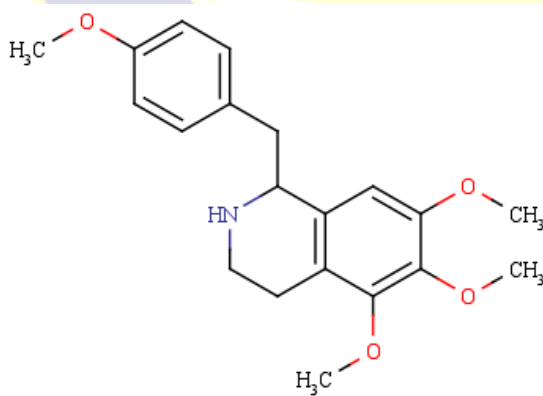
Gambar III.6 Annoionol A



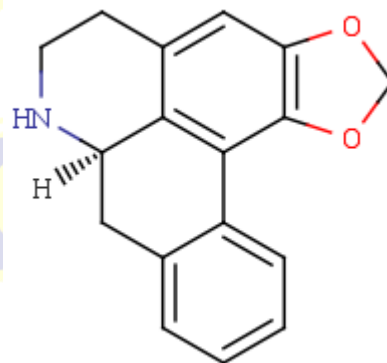
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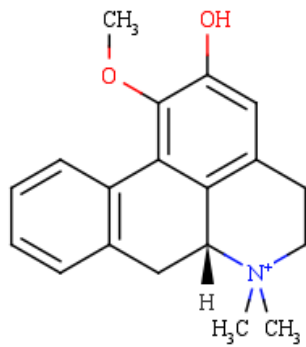
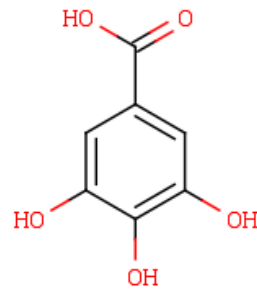
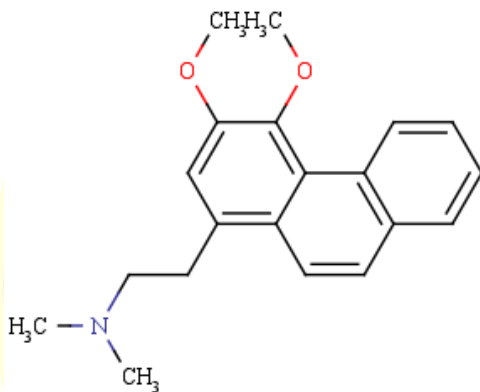
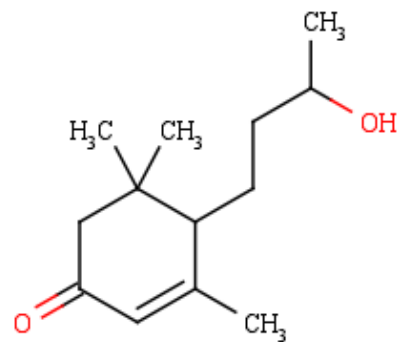
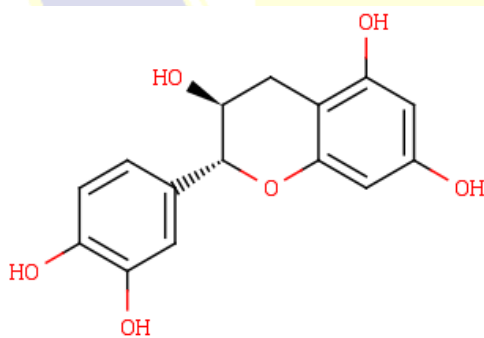
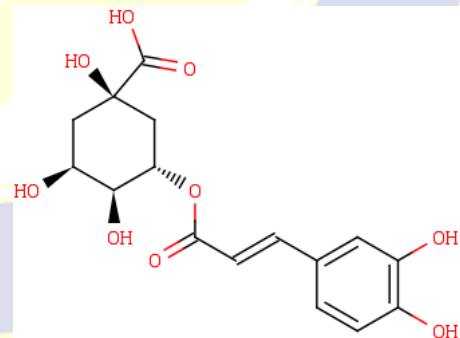
Gambar III.8 Annoionoside



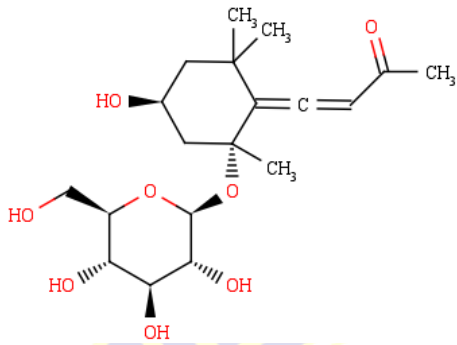
Gambar III.9 Anomurine



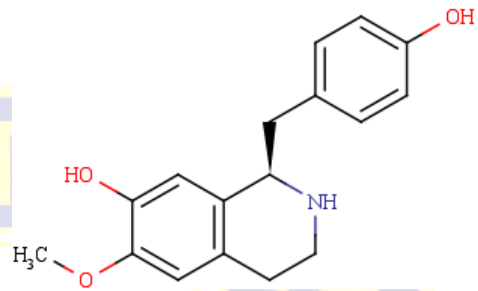
Gambar III.10 Anonaine

**LAMPIRAN 4
(LANJUTAN)****Gambar III.11** Annonamine**Gambar III.12** Asam Galat**Gambar III.13** Atherosperminine**Gambar III.14** Blumenol C**Gambar III.15** Catechin**Gambar III.16** Chlorogenic Acid

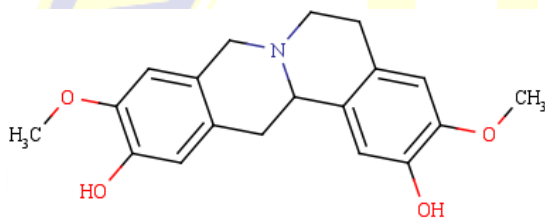
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(LANJUTAN)**



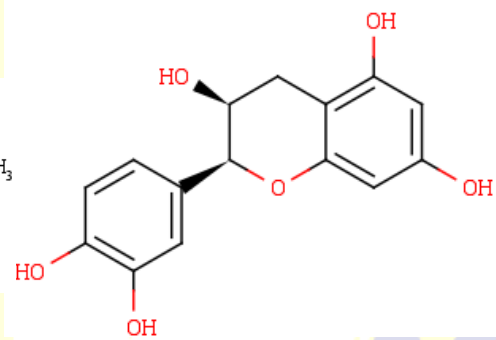
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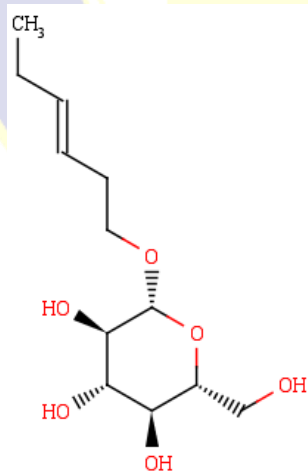
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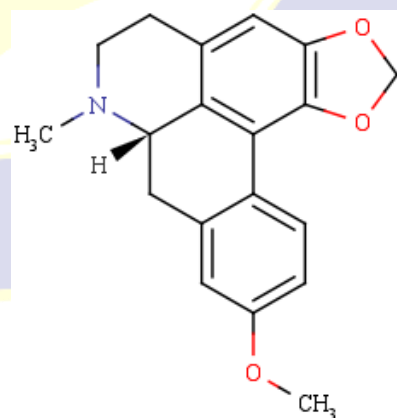
Gambar III.19 Coreximine



Gambar III.20 Epicatechin

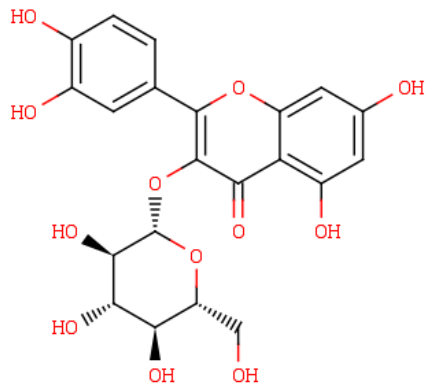


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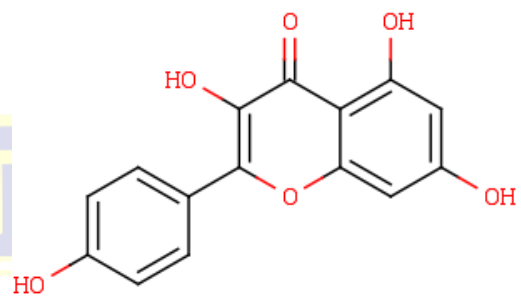


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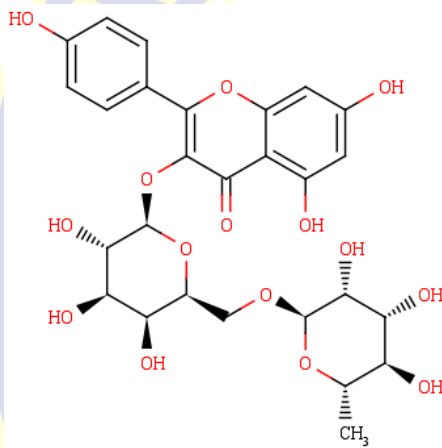
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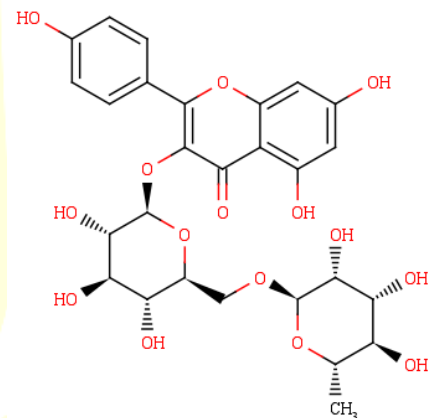
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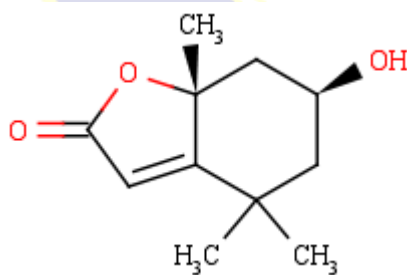
Gambar III.24 Kaempferol



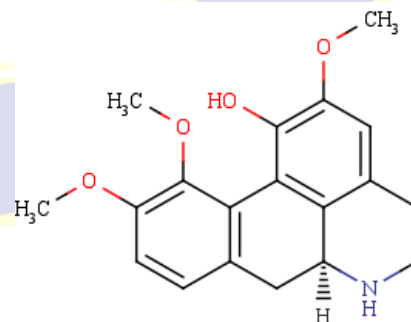
Gambar III.25 Kampferol 3-O-robinobioside



Gambar III.26 Kampferol 3-O-rutinoside

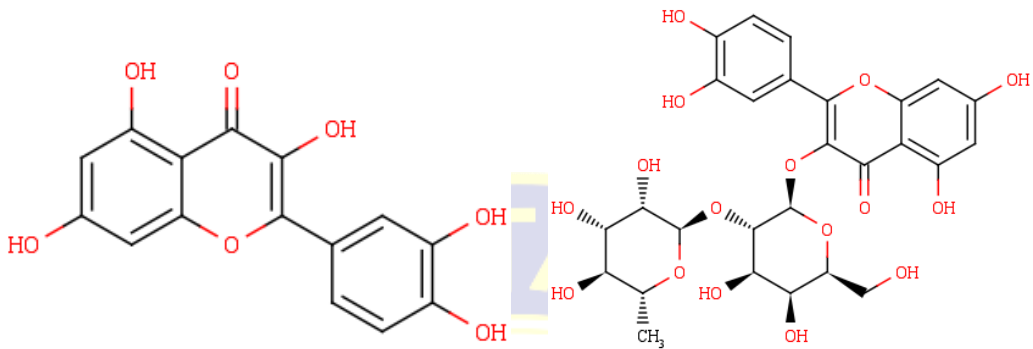


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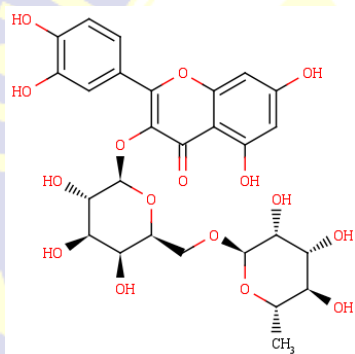
Gambar III.28 Norcorydine

**LAMPIRAN 4
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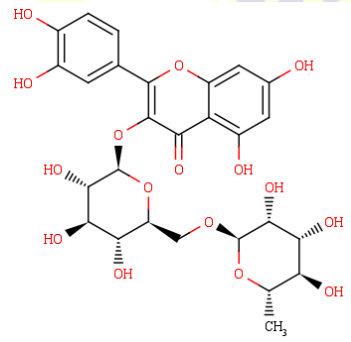


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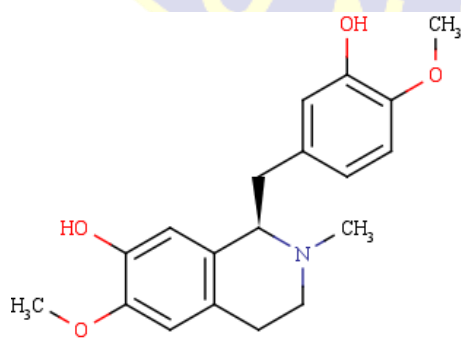
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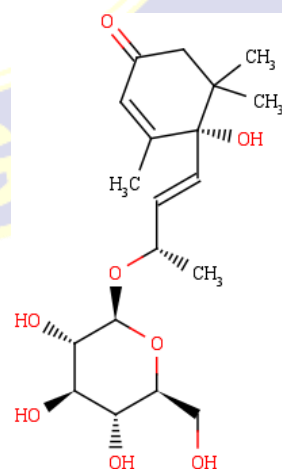
Gambar III.31 Quercetin 3-O-robinobioside



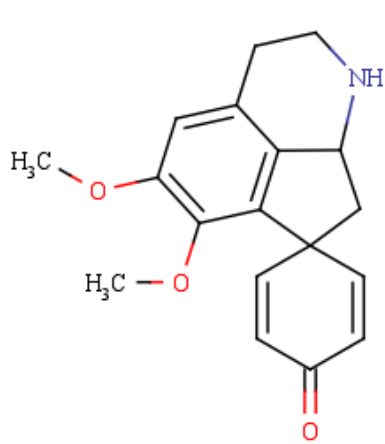
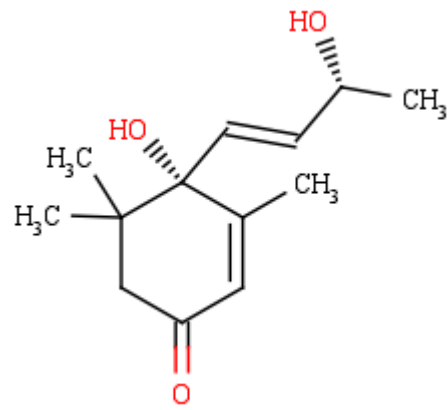
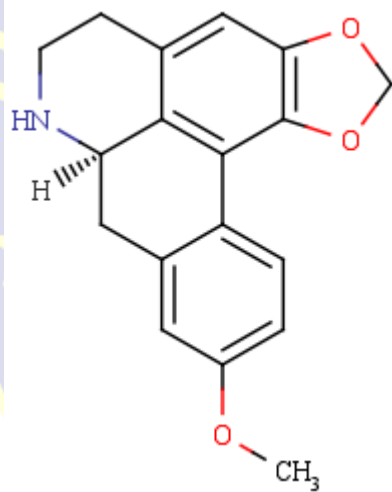
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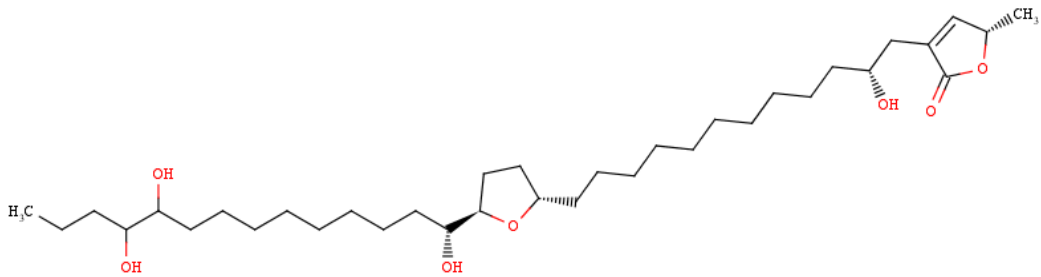
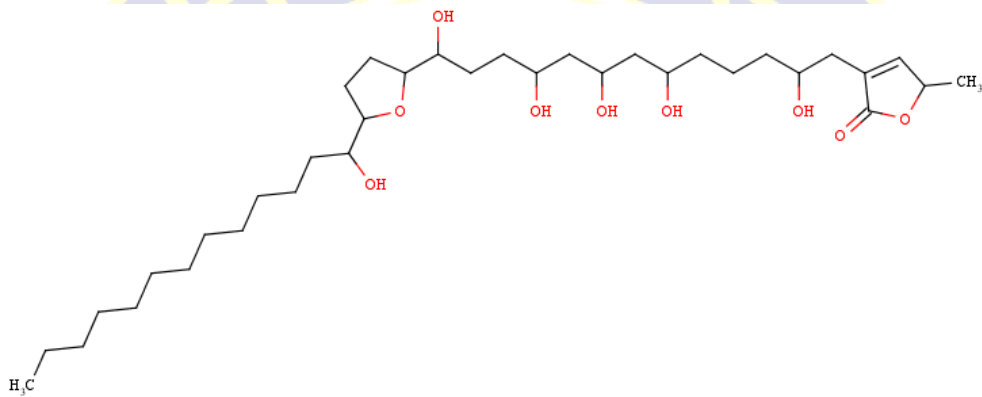
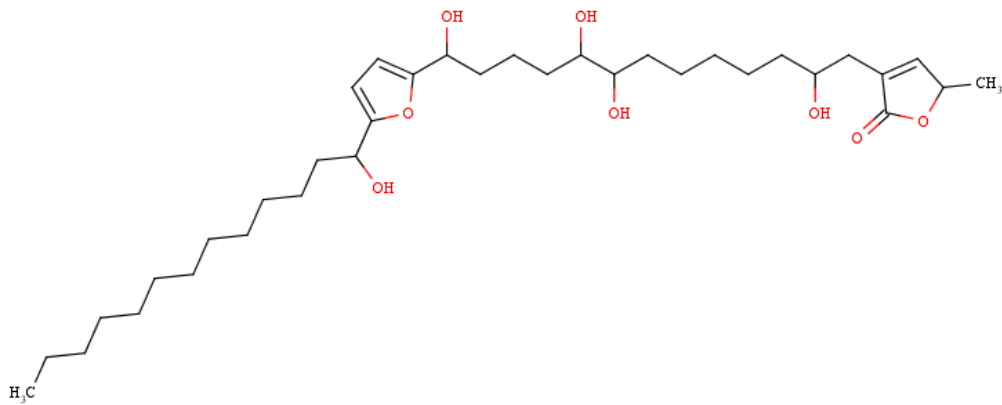


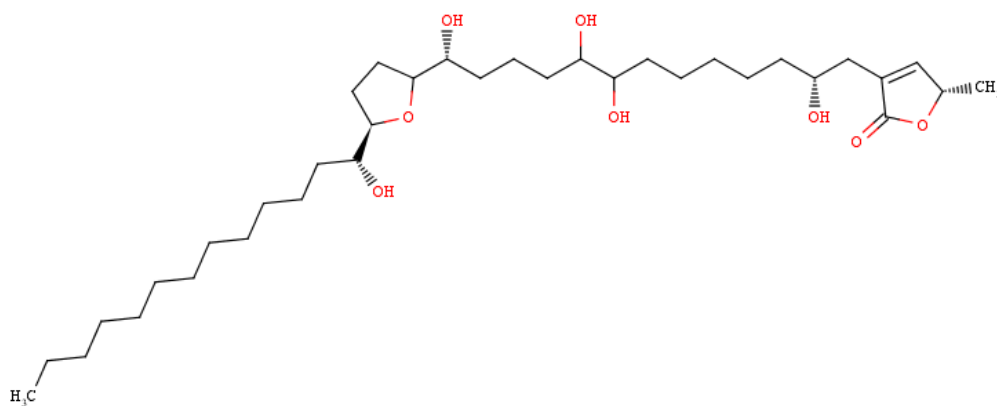
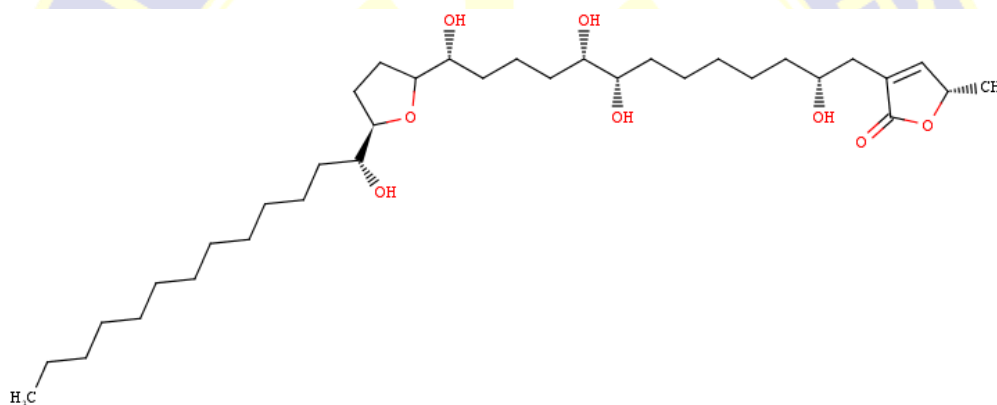
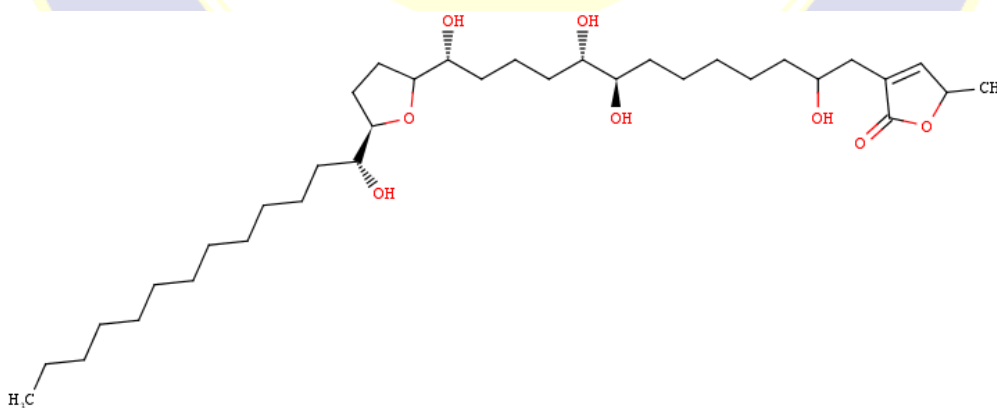
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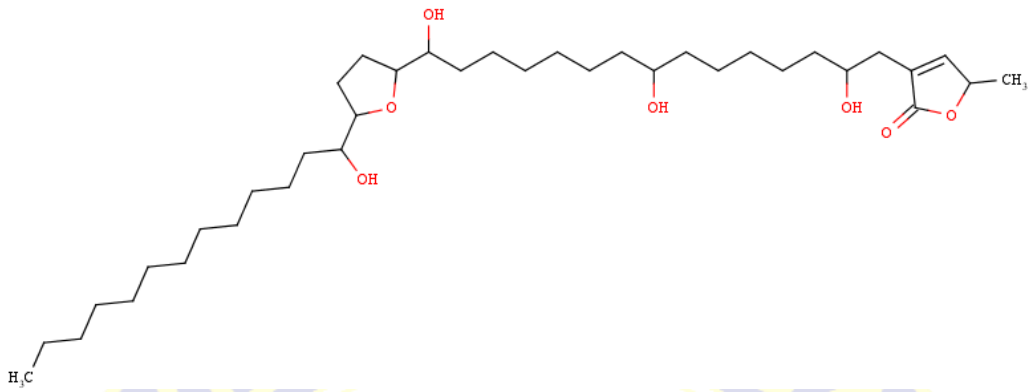
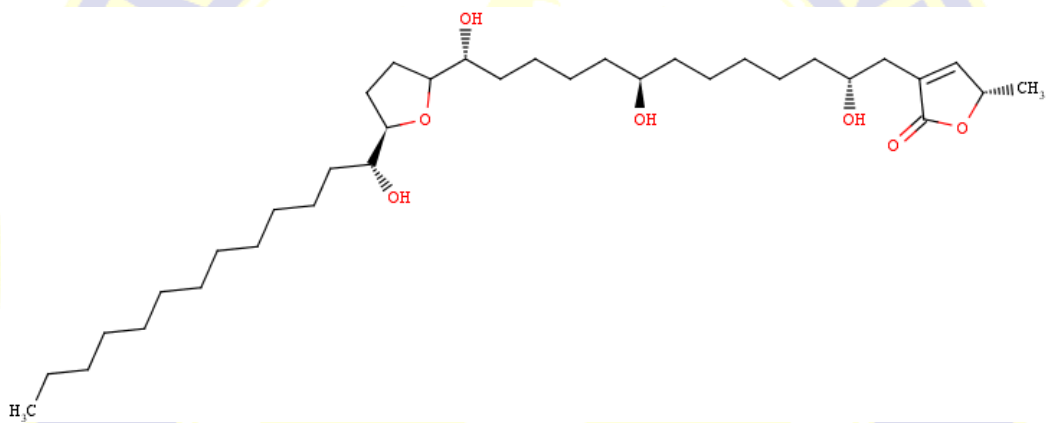
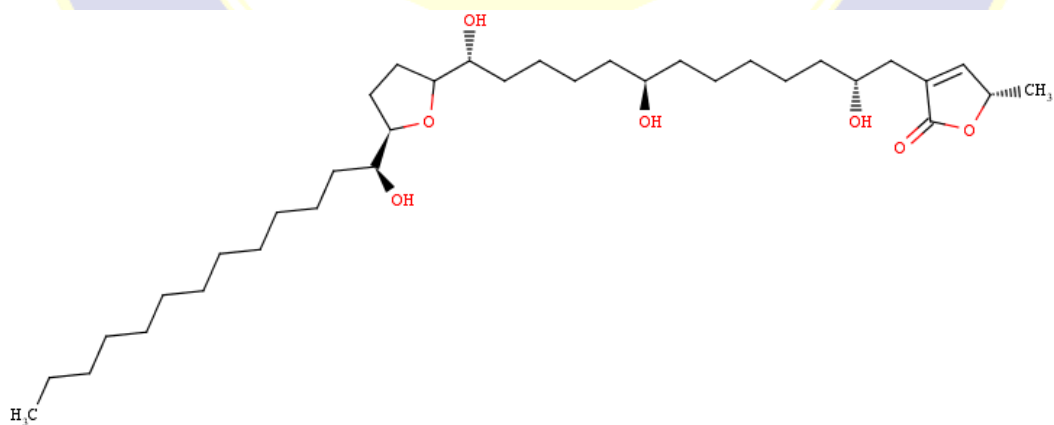


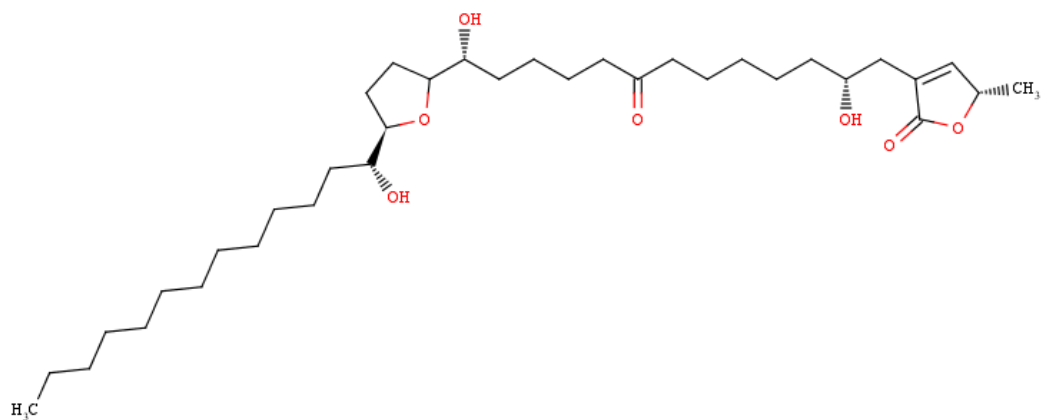
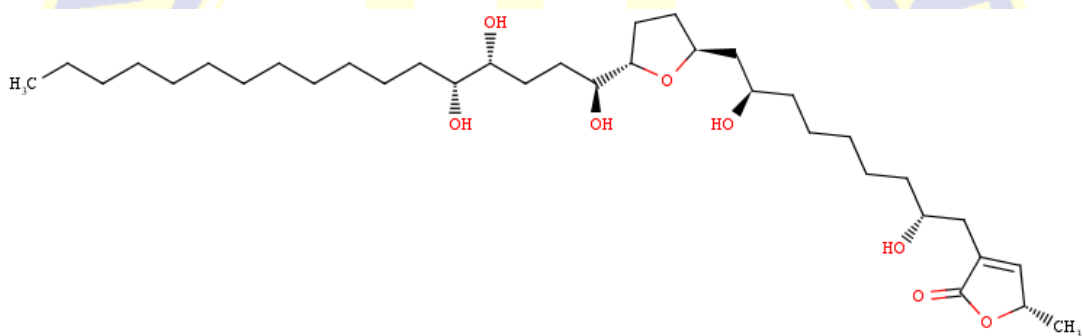
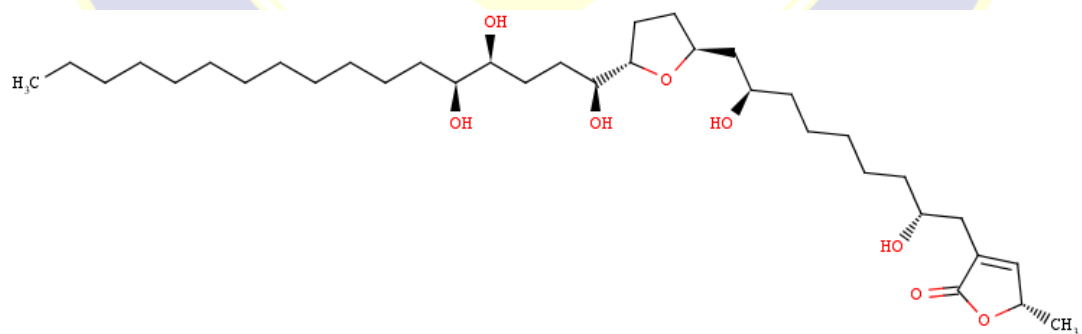
Gambar III.34 Roseoside

**LAMPIRAN 4
(LANJUTAN)****Gambar III.35** Stepharine**Gambar III.36** Vomifoliol**Gambar III.37** Xylopine

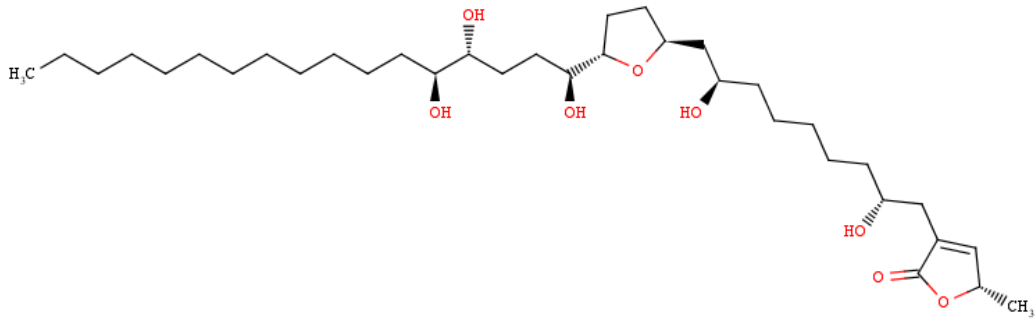
**LAMPIRAN 4
(LANJUTAN)****Gambar III.38 Annocatalin****Gambar III.39 Annohexocine****Gambar III.40 Annomuricine A**

**LAMPIRAN 4
(LANJUTAN)****Gambar III.41 Annomuricine B****Gambar III.42 Annomuricine C****Gambar III.43 Annomuricine E**

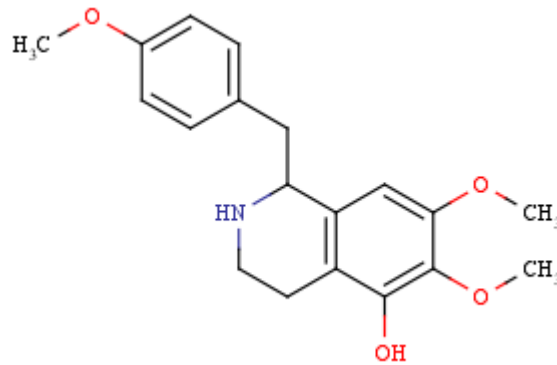
**LAMPIRAN 4
(LANJUTAN)****Gambar III.44 Annomutacin****Gambar III.45 Annonacin****Gambar III.46 Annonacin A**

**LAMPIRAN 4
(LANJUTAN)****Gambar III.47 Annonacinone****Gambar III.48 Annopentocin A****Gambar III.49 Annopentocin B**

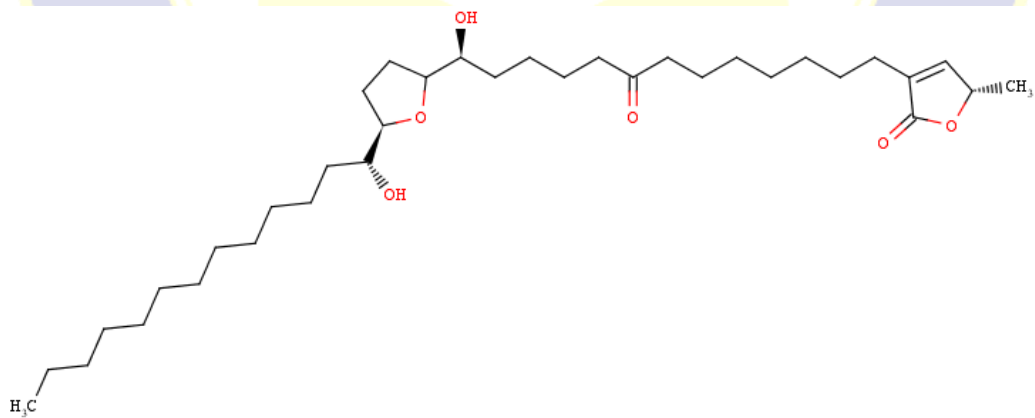
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(LANJUTAN)**



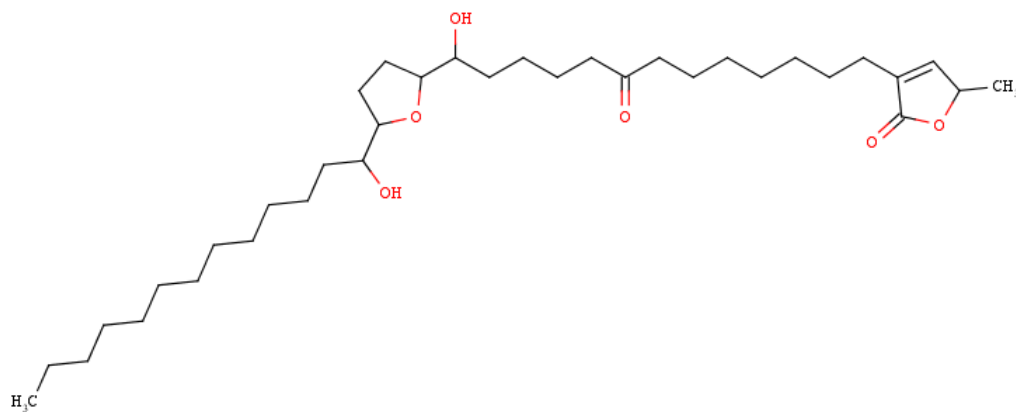
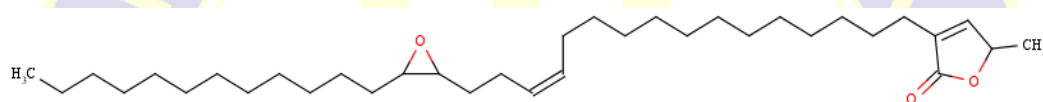
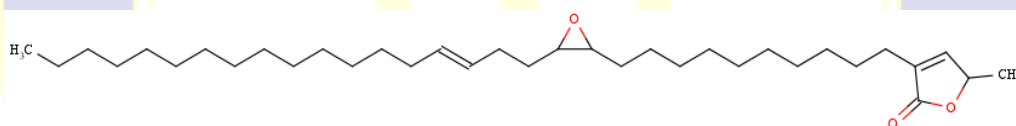
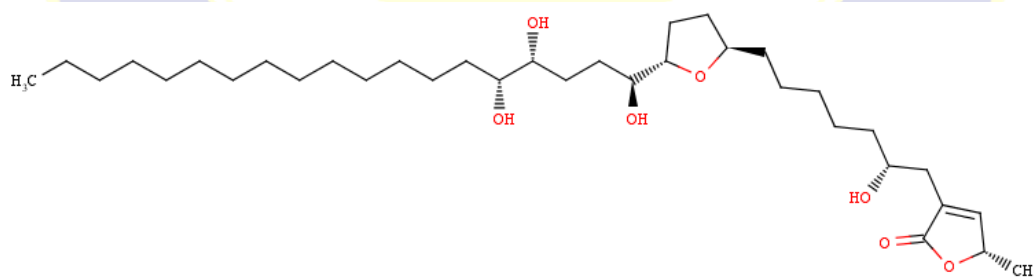
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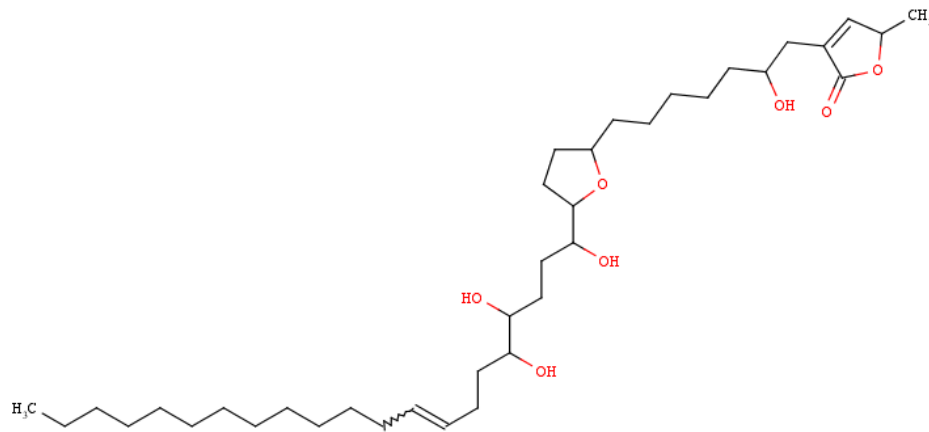
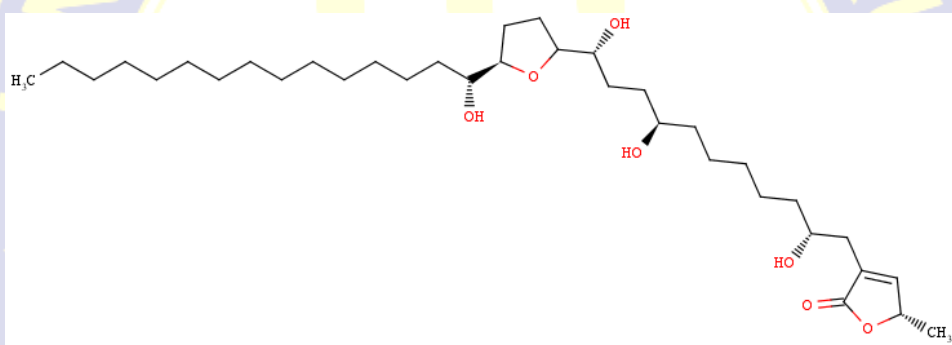
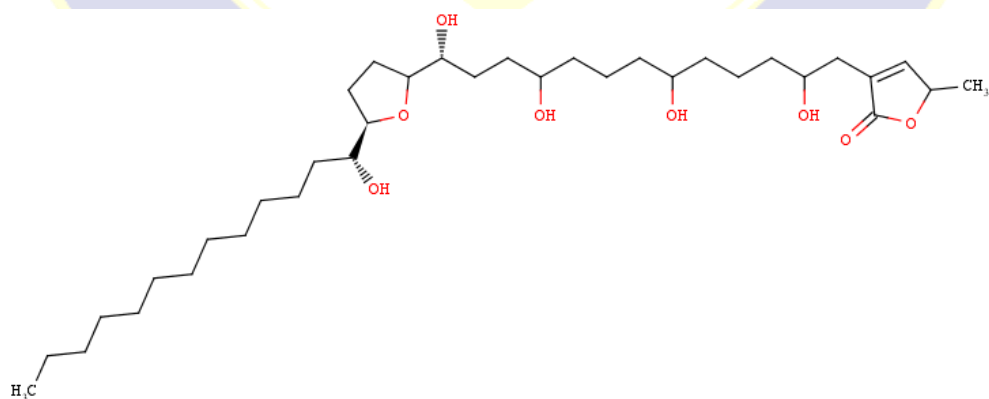


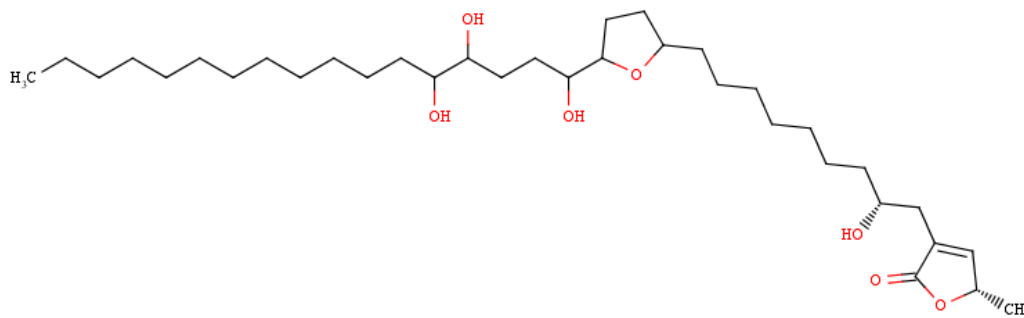
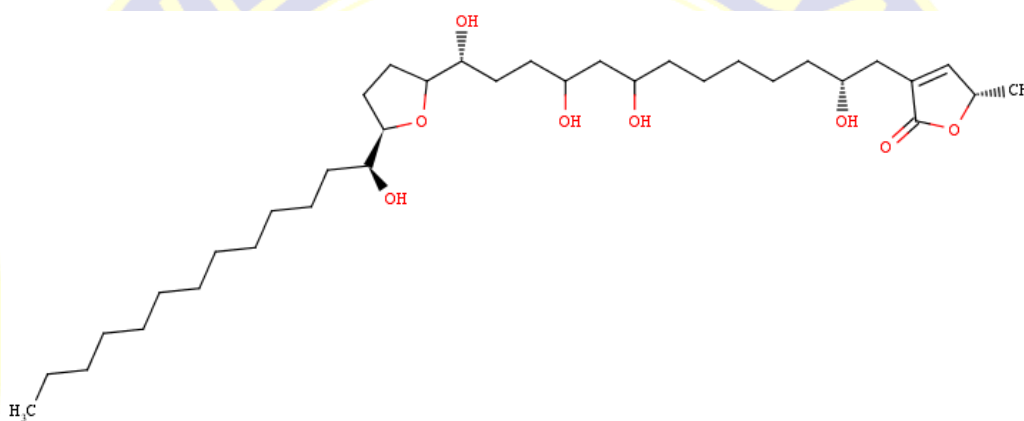
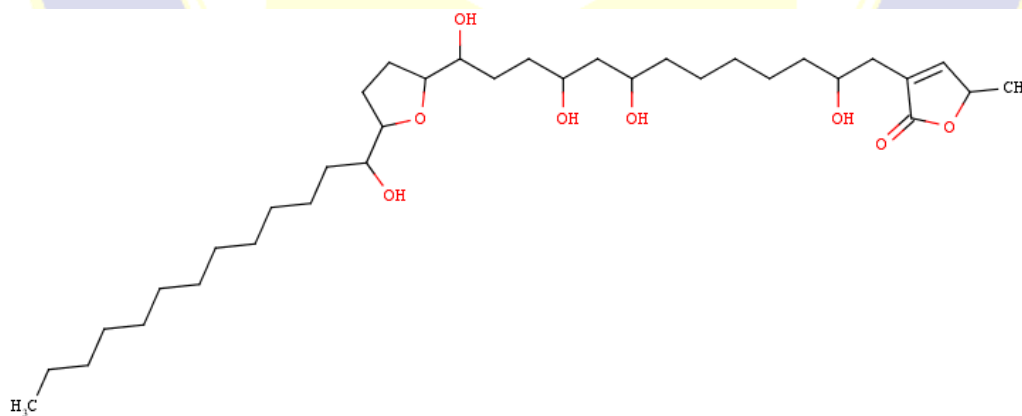
Gambar III.51 Anomuricine



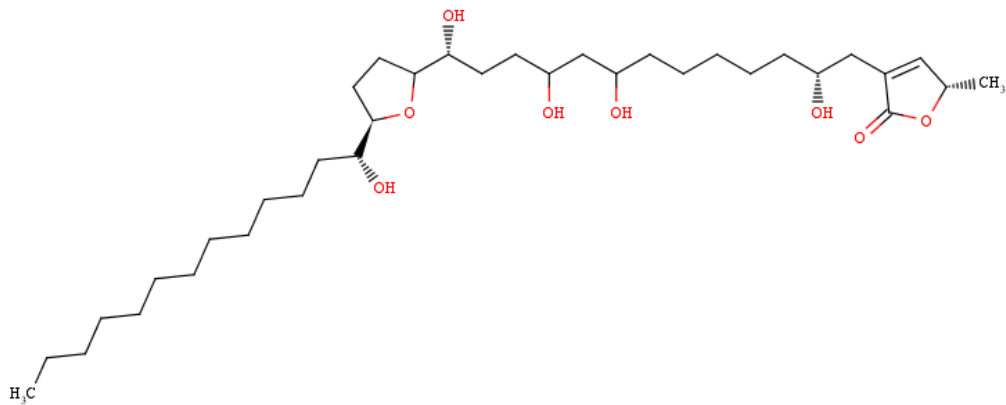
Gambar III.52 Cis-Corossolone

**LAMPIRAN 4
(LANJUTAN)****Gambar III.53 Corossolone****Gambar III.54 Epomuricenin A****Gambar III.55 Epomuricenin B****Gambar III.56 Gigantetrocin A**

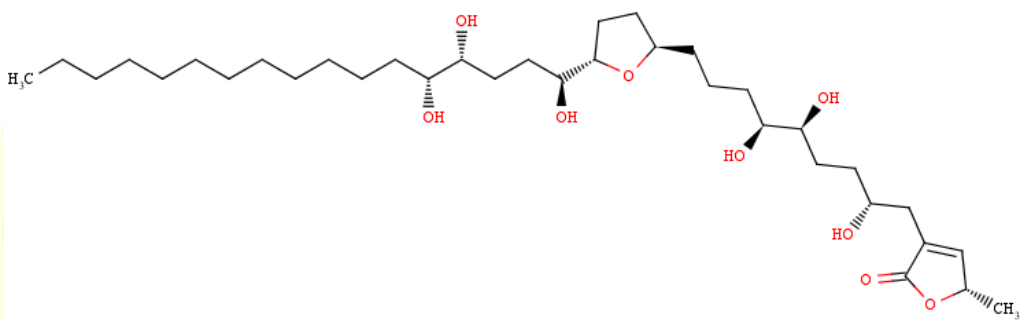
**LAMPIRAN 4
(LANJUTAN)****Gambar III.57 Gigantetronenine****Gambar III.58 Goniotalamicin****Gambar III.59 Muricapentocin**

**LAMPIRAN 4
(LANJUTAN)****Gambar III.60 Muricatetrocin A****Gambar III.61 Muricatocin A****Gambar III.62 Muricatocin B**

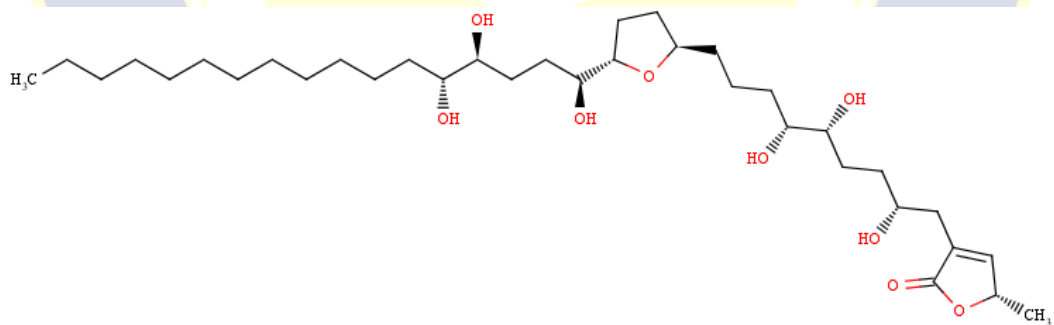
**LAMPIRAN 4
(LANJUTAN)**



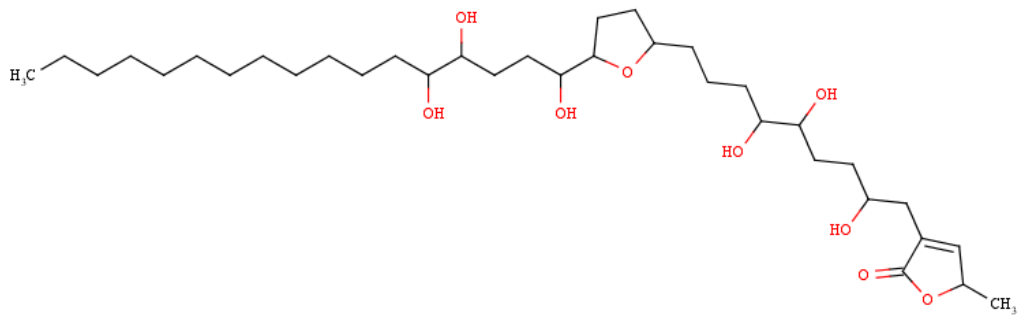
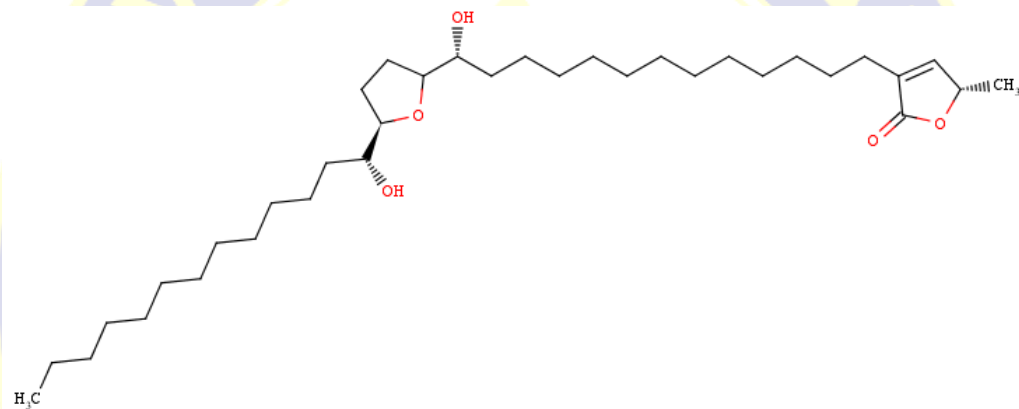
Gambar III.63 Muricatocin C



Gambar III.64 Muricahexocine A

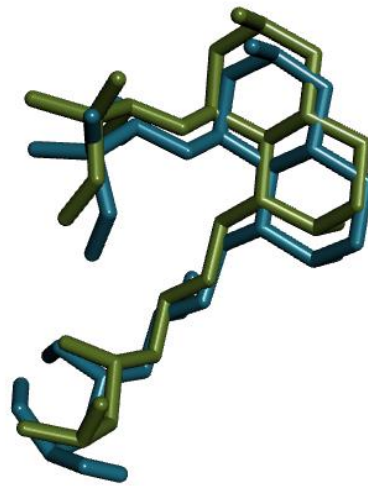


Gambar III.65 Muricahexocin B

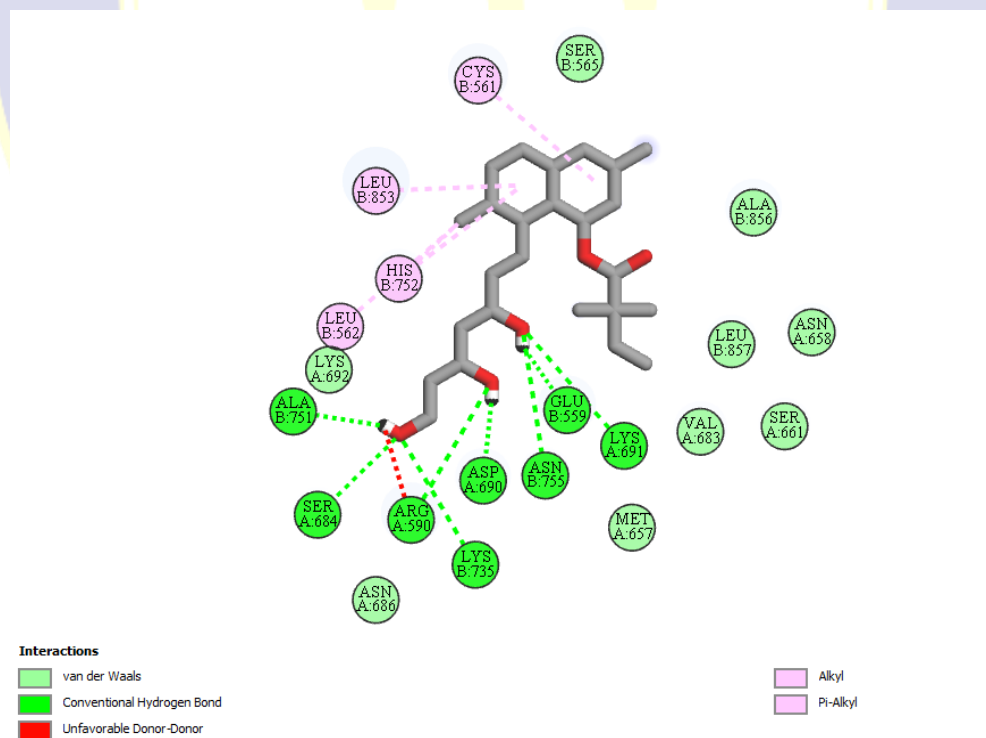
**LAMPIRAN 4
(LANJUTAN)****Gambar III.66 Muricahexocin C****Gambar III.67 Solamin**

LAMPIRAN 5

VALIDASI METODE

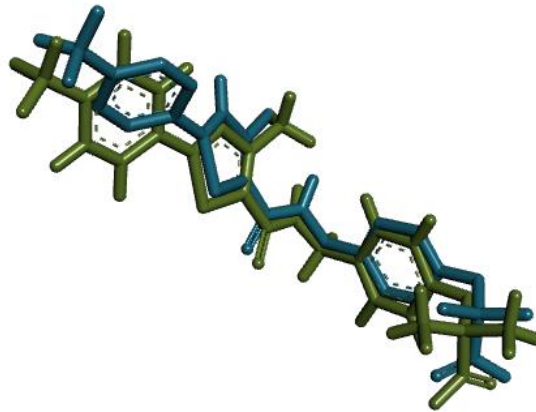


Gambar V.3 Hasil visualisasi tumpang tindih ligan alami dari Enzim HMG CoA Reduktase dari hasil kristalografi sinar-X (hijau) dengan ligan hasil *redocking* (biru)

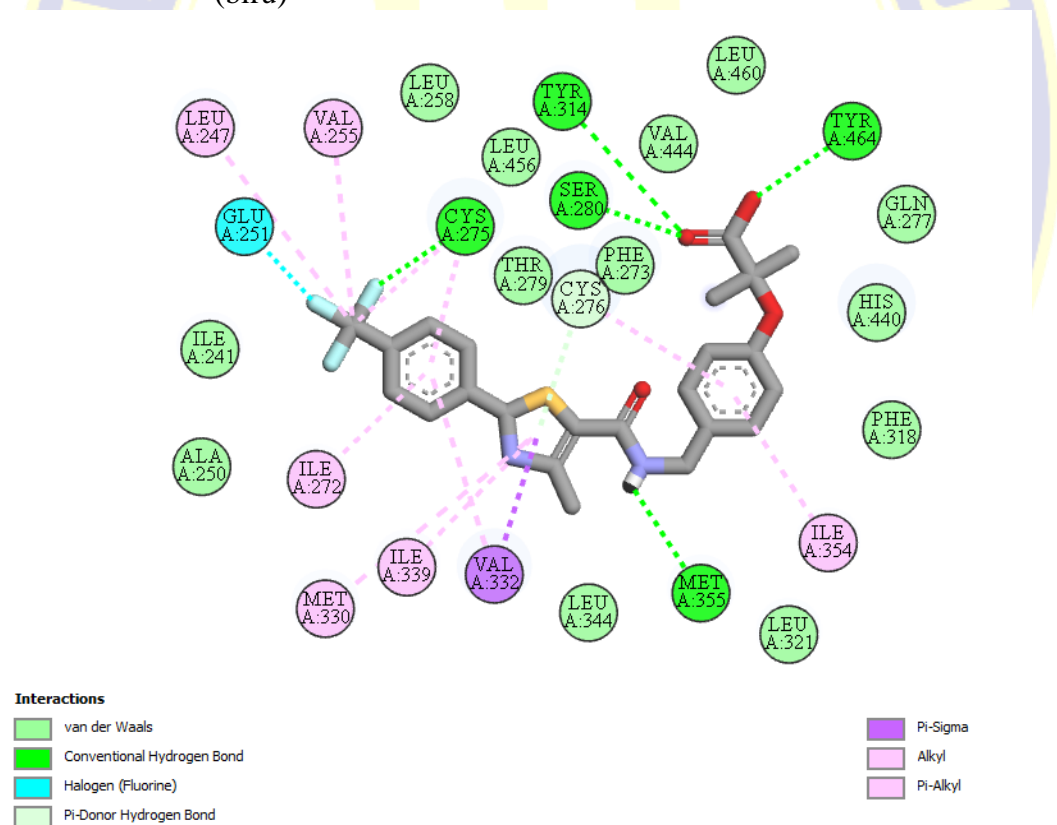


Gambar V.4 Hasil visualisasi interaksi ligan alami dengan enzim HMG-CoA reduktase

LAMPIRAN 5 (LANJUTAN)



Gambar V.5 Hasil visualisasi tumpang tindih ligan alami dari reseptor PPAR α dari hasil kristalografi sinar-X (hijau) dengan ligan hasil *redocking* (biru)



Gambar V.6 Hasil visualisasi interaksi ligan alami dengan reseptor PPAR α

**LAMPIRAN 5
(LANJUTAN)****Tabel V.1***Grid Box, RMSD, Nilai ikatan Energi, Ligan Alami dan Ligan Pembanding*

| Kode Reseptor | Grid Box | RMSD (Å) | Ikatan Energi Bebas Pembanding | Ikatan Energi Bebas Ligan Alami |
|----------------------|---------------------------------------|-----------------|---------------------------------------|----------------------------------------|
| 1HW9 | X : 17.361 Y : 7.28 Z : 14.577 | 0,929 | - | -7,33 |
| 2P54 | X : 15.324 Y : 39.88 Z : 27.766 | 0,802 | -7,17 | -10,40 |

LAMPIRAN 6

HASIL PENAMBATAN MOLEKUL

Tabel V.2

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|----------------------------|---------------------------------------|------------------------|------------------------------------------------------------------------|----------------|
| Ligan Alami (Simvastatin) | -7,33 | 8 | GLU559, ARG590, SER684, ASP690, LYS691, LYS735, ALA751, ASN755 | 4,24 |
| Chlorogenic acid | -8,55 | 8 | ARG590, SER684, ASP690, LYS691, LYS692, LYS735, ALA751, ASN755 | 0,534 |
| Roseoside | -7,53 | 9 | GLU559, GLY560, SER565, ARG590, SER684, LYS691, LYS735, ALA751, ASN755 | 3,02 |
| Quercetin 3-O-robinobiside | -7,31 | 8 | ARG590, ASN658, SER661, GLU665, LYS692, LYS735, ALA751, ASP767 | 4,38 |
| Norcorydine | -7,25 | 2 | GLU559, LYS735 | 4,84 |
| Epicatechine | -7,14 | 6 | ARG590, ASP690, LYS692, ALA751, LYS735, ASN755 | 5,85 |
| Catechine | -7,09 | 6 | GLU559, GLY560, LYS691, LYS735, ALA751, ASN755 | 6,34 |
| Stepharine | -6,90 | 3 | GLU559, SER565, ARG590 | 8.73 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.2

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|---------------|---------------------------------------|------------------------|------------------------------------------------|----------------|
| Kaempferol | -6,73 | 6 | GLU559, ARG590, ASN658, LYS691, ALA751, ASN755 | 11,75 |
| Gallic Acid | -6,71 | 6 | ARG590, SER684, LYS691, LYS735, ALA751, ASN755 | 12,03 |
| Anomuricine | -6,71 | 3 | GLU559, SER661, LYS735 | 12,11 |
| Blumenol C | -6,52 | 5 | GLU559, ARG590, SER684, CYS688, ASN755 | 16,17 |
| Xylopine | -6,42 | 2 | ARG590, ASP767 | 19,72 |
| Citroside A | -6,29 | 4 | SER565, ARG590, ASP690, ASN658 | 24,64 |
| Vomifoliol | -6,20 | 4 | GLU559, ASP690, LYS691, ASN755 | 28,51 |
| Anomurine | -6,33 | 3 | GLU559, SER661, SER684 | 22,95 |
| Coclaurine | -6,05 | 3 | GLU559, SER565, ALA751 | 36,94 |
| Isoquercetin | -6,10 | 6 | GLY560, ARG590, ASN658, SER661, ALA751, ASN755 | 40,25 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.2

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|------------------------------|---------------------------------------|------------------------|------------------------------------------------------------------------|----------------|
| Quercetin | -5,96 | 7 | ARG590, SER661, ASN658, SER684, LYS591, LYS735, ALA751 | 42,64 |
| Annonaine | -5,95 | 2 | GLY560, ARG590 | 43,31 |
| Reticuline | -5,80 | 4 | ARG590, ASN658, SER661, ASP690 | 56,28 |
| Annoionoside | -5,73 | 9 | GLU559, ARG590, SER661, SER684, ASP690, LYS691, LYS735, ALA751, ASN755 | 63,02 |
| Loliolide | -5,68 | 2 | GLU559, LYS735 | 68,09 |
| Isolaureline | -5,61 | - | - | 77,26 |
| Erigeside B | -5,61 | 5 | ARG590, ASP690, LYS691, LYS735, ALA751 | 77,75 |
| Annoionol B | -5,55 | 5 | GLU559, ASN658, ASP690, LYS692, ASN755 | 85,44 |
| Annoionol A | -5,55 | 3 | SER661, LYS735, ALA751 | 85,65 |
| Kaempferol 3-O-robinobioside | -5,52 | 5 | SER565, ARG590, ASN658, ASP690, ASN755 | 90,43 |
| Anonamine | -5,50 | 2 | ARG590, ASP690 | 93,47 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.2

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|--------------------------------|---------------------------------------|------------------------|----------------------------------------|----------------|
| Kaempferol 3-O-rutinoside | -5,40 | 5 | GLU559, ASN658, GLU665, ASP690, LYS691 | 110,62 |
| Atherosperminine | -5,37 | - | - | 114,88 |
| Quercetin 3-O-neohesperidoside | -5,24 | 4 | SER565, ASN658, LYS735, ALA751 | 143,03 |
| Coreximine | -5,14 | 5 | ARG590, ASP690, LYS691, ASN755, ALA856 | 171,94 |
| Gigantetrocine A | -4,89 | 4 | GLU559, ARG590, ASP690, ASN755 | 261,51 |
| Quercetin 3-O-rutinoside | -4,73 | 5 | ASN658, GLU665, LYS735, ALA751, ASP767 | 340,50 |
| Epomuricenin B | -3,25 | 2 | SER684, LYS735 | 4.180 |
| Epomuricenin A | -3,13 | 2 | SER565, ARG590 | 6.080 |
| Annomuricine B | -2,94 | 4 | ARG590, ASN658, SER661, LYS692 | 7.040 |
| Cis-corosolone | -2,51 | 3 | GLU559, LYS691, ASN755 | 14.350 |
| Muricatetrocin A | -2,37 | 2 | GLU559, ASN755 | 18.430 |
| Annonacinone | -2,23 | 2 | SER565, SER684 | 23.340 |
| Solamin | -2,20 | 2 | ASN658, LYS692 | 24.310 |
| Corosolone | -2,19 | 1 | ASN755 | 24.620 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.2
Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|----------------------|-------------------------------------------------------|-------------------------------|------------------------------------------------|--------------------------------|
| Goniothalamisin | -2,19 | 2 | ARG590, ALA856 | 25.010 |
| Muricatocin C | -2,14 | 4 | GLU559, ARG590, GLU665, LYS691 | 26.900 |
| Muricahexocin B | -2,05 | 5 | GLU559, ARG590, ASN658, LYS691, LYS735, ALA751 | 31.390 |
| Annomutacin | -1,76 | 4 | GLU559, LYS561, LYS691, ASN755 | 51.320 |
| Annonacin | -1,75 | 2 | GLU559, ASN658 | 52.290 |
| Annopentocin B | -1,66 | 4 | GLU559, GLU665, ASP690, ASN755 | 60.300 |
| Annopentocin A | -1,59 | 2 | ASN658, ASP690 | 68.590 |
| Annocatalin | -1,58 | 2 | GLU559, ASN755 | 68.950 |
| Muricatocin B | -1,58 | 3 | GLY560, ARG590, SER661 | 68.980 |
| Annohexocin | -1,47 | 3 | ARG590, ASN658, SER684 | 83.130 |
| Annonacin A | -1,40 | 1 | GLU559 | 94.600 |
| Annipentocin C | -1,34 | 2 | ASN658, ASP690 | 104.690 |
| Annomuricine E | -1,20 | 4 | GLU559, GLY560, LYS691, LYS692 | 132.700 |
| Gigantetronenine | -1,16 | 2 | ALA751, ASN755 | 140.860 |
| Muricahexocine C | -1,11 | 3 | GLU559, ARG590, GLU665 | 153.860 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.2

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Enzim HMG CoA Reduktase

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|------------------|---------------------------------------|------------------------|----------------------------------------|----------------|
| Muricatocin A | -0,96 | 2 | ARG590, GLU665 | 197.730 |
| Muricahexocin A | -0,93 | 5 | GLU559, ASN658, ASP690, HIS752, ASN755 | 208.950 |
| Muricapentocin | -0,80 | - | - | 259.240 |
| Annomuricine C | -0,74 | 4 | GLU559, ARG590, ASN658, ASN755 | 287.320 |
| Annomuricine A | -0,58 | 2 | ASN658, SER661 | 376.100 |
| (+)-epiloliolide | +111,16 | - | - | - |

Tabel V.3

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Reseptor PPAR α

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|------------------|---------------------------------------|------------------------|----------------------------------------|----------------|
| Ligan Alami | -10,54 | 5 | CYS275, SER280, TYR314, TYR355, TYR464 | -0,18 |
| Gemfibrozil | -7,17 | 2 | TYR314, TYR464 | 5,51 |
| Epomuricenin B | -8,42 | - | - | 0,66 |
| Atherosperminine | -8,35 | 1 | ALA333 | 0,76 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.3

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Reseptor PPAR α

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|-----------------|---------------------------------------|------------------------|--------------------------------|----------------|
| Solamin | -8,14 | 1 | TYR464 | 1,09 |
| Anonamine | -8,12 | 2 | THR279, ALA333 | 1,11 |
| Cis-corosolone | -8,09 | 1 | THR279 | 1,17 |
| Isolaureline | -8,02 | 1 | THR279 | 1,31 |
| Epomuricenin A | -8,01 | - | - | 1,34 |
| Norcorydine | -7,95 | 1 | ALA333 | 1,50 |
| Anonaine | -7,93 | 1 | THR279 | 1,55 |
| Annonacinone | -7,88 | 3 | CYS276, SER280, ALA333 | 1,68 |
| Corosolone | -7,79 | 1 | CYS276 | 1,96 |
| Xylopine | -7,75 | - | - | 2,10 |
| Stepharine | -7,71 | 2 | CYS276, ALA333 | 2,24 |
| Roseoside | -7,52 | 3 | CYS276, THR279, SER280 | 3,06 |
| Anomurine | -7,40 | 1 | CYS276 | 3,77 |
| Reticuline | -7,37 | 3 | THR279, SER280, ALA333 | 3,98 |
| Coreximine | -7,36 | 1 | SER280 | 4,02 |
| Goniothalamisin | -7,36 | 4 | CYS276, THR279, SER280, TYR314 | 4,02 |
| Annoionoside | -7,09 | 3 | CYS276, THR279, ALA333 | 6,39 |
| Anomuricine | -6,99 | 2 | CYS276, ALA333 | 7,46 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.3

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Reseptor PPAR α

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|--------------------------------|---------------------------------------|------------------------|------------------------------------------------|----------------|
| Gigantetronenine | -6,99 | 2 | THR279, ALA333 | 7,55 |
| Catechine | -6,45 | 6 | CYS276, THR279, SER280, MET330, ALA333, MET355 | 18,58 |
| Annopentocin C | -6,39 | 2 | CYS276, SER280 | 20,61 |
| Coclaurine | -6,36 | 1 | SER280 | 21,65 |
| Quercetin 3-O-neohesperidoside | -6,31 | 4 | CYS275, CYS276, THR279, SER280 | 23,52 |
| Blumenol C | -6,30 | 2 | THR279, ALA333 | 23,95 |
| Kaempferol 3-O-rutinoside | -6,30 | 3 | GLU269, CYS276, MET355 | 24,15 |
| Kaempferol 3-O-robinobioside | -6,27 | 3 | CYS276, SER280, MET330 | 25,30 |
| Muricatetrocin A | -6,26 | 1 | LEU331 | 25,75 |
| Kaempferol | -6,19 | 4 | CYS276, THR279, ALA333, MET355 | 29,10 |
| Epicatchine | -6,15 | 2 | SER280, MET330 | 31,30 |
| Vomifoliol | -6,01 | 3 | CYS276, SER280, TYR314 | 39,44 |
| Annoionol A | -5,99 | 2 | THR279, ALA333 | 40,40 |
| Annomuricine B | -5,98 | 2 | CYS276, THR279 | 41,02 |
| Annoionol B | -5,96 | 5 | ILE272, CYS276, THR279, MET330, ALA333 | 43,10 |
| Loliolide | -5,94 | 2 | SER280, TYR314 | 44,53 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.3

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Reseptor PPAR α

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|-----------------------------|---------------------------------------|------------------------|----------------------------------------|----------------|
| Quercetin | -5,87 | 1 | SER280 | 49,44 |
| Quercetin 3-O-robinobioside | -5,83 | 3 | CYS275, CYS276, SER280 | 53,15 |
| Muricatocin A | -5,70 | 3 | SER280, MET330, MET355 | 65,83 |
| Annopentocin B | -5,69 | 3 | CYS275, THR279, ALA333 | 67,10 |
| (+)-epiloliolide | -5,68 | 1 | GLU251 | 69,02 |
| Muricatocin B | -5,64 | 2 | THR279, SER280 | 73,14 |
| Isoquercetin | -5,63 | 3 | GLU276, SER280, MET355 | 74,47 |
| Muricahexocine C | -5,63 | 4 | ILE272, THR279, SER280, ALA333 | 75,12 |
| Quercetin 3-O-rutinoside | -5,26 | 3 | ILE272, CYS276, SER280 | 138,55 |
| Muricahexocine B | -5,07 | 4 | CYS275, CYS276, SER280, MET355 | 190,66 |
| Chlorogenic Acid | -4,99 | 2 | ILE272, CYS276 | 220,97 |
| Gigantetrocine A | -4,98 | 2 | CYS276, MET355 | 222,58 |
| Annomuricine A | -4,77 | 5 | THR279, SER280, LEU331, ALA333, TYR464 | 319,26 |
| Annonacin | -4,48 | 1 | THR279 | 520,19 |
| Annomuricine C | -4,34 | 1 | CYS276 | 659,08 |
| Annohexocine | -4,31 | 1 | SER280 | 697,59 |

**LAMPIRAN 6
(LANJUTAN)**

Tabel V.3

Nilai Ikatan Energi dari Ligan Alami dan Senyawa Uji Pada Reseptor PPAR α

| Senyawa/Ligan | Ikatan energi (ΔG) kcal/mol | Jumlah ikatan hidrogen | Residu asam amino | KI (μM) |
|-----------------|---------------------------------------|------------------------|------------------------|----------------|
| Muricatocin C | -4,21 | 1 | SER280 | 818,09 |
| Annonacin A | -4,06 | - | - | 1.060 |
| Citroside A | -3,93 | 2 | CYS276, SER280 | 1.320 |
| Annopentocin A | -3,86 | - | - | 1.490 |
| Annocatalin | -3,74 | 3 | GLU251, CYS275, THR279 | 1.810 |
| Asam Galat | -3,67 | 3 | ILE272, THR279, ALA333 | 2.040 |
| Erigeside B | -3,55 | 1 | SER280 | 2.500 |
| Annomuricine E | -2,67 | 1 | THR283 | 11.020 |
| Annomotacin | -2,33 | 1 | SER280 | 19.700 |
| Muricahexocin A | -2,28 | 1 | TYR464 | 21.400 |
| Muricapentocin | -1,64 | 2 | CYS276, THR279 | 62.590 |

LAMPIRAN 7

HASIL PENGUJIAN *LIPINSKI'S RULE OF FIVE*

Tabel V.4

Sifat Fisikokimia Senyawa yang Terkandung Didalam Daun Sirsak Berdasarkan Aturan 5 Lipinski

| Senyawa Uji | Donor Ikatan Hidrogen | Akseptor Ikatan Hidrogen | Bobot Molekul | LogP | Memenuhi Syarat/Tidak |
|------------------|-----------------------|--------------------------|---------------|-------|-----------------------|
| (+)-Epiloliolide | 1 | 3 | 196 | 1,41 | Memenuhi |
| Annocatalin | 4 | 7 | 596 | 7,06 | Tidak memenuhi |
| Annohexocin | 6 | 9 | 628 | 5,00 | Tidak memenuhi |
| Annoionol A | 3 | 3 | 230 | 1,55 | Memenuhi |
| Annoionol B | 4 | 4 | 244 | 0,44 | Memenuhi |
| Annoionoside | 7 | 9 | 406 | -1,73 | Tidak memenuhi |
| Annomuricin A | 5 | 8 | 608 | 7,12 | Tidak memenuhi |
| Annomuricin B | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Annomuricin C | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Annomuricin E | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Annomurine | 2 | 5 | 329 | 2,85 | Memenuhi |
| Annomutacin | 4 | 7 | 624 | 7,84 | Tidak memenuhi |
| Annonacin | 4 | 7 | 596 | 7,06 | Tidak memenuhi |
| Annonacin A | 4 | 7 | 596 | 7,06 | Tidak memenuhi |

**LAMPIRAN 7
(LANJUTAN)**

Tabel V.4
Sifat Fisikokimia Senyawa yang Terkandung Didalam Daun Sirsak Berdasarkan Aturan 5 Lipinski

| Senyawa Uji | Donor Ikatan Hidrogen | Akseptor Ikatan Hidrogen | Bobot Molekul | LogP | Memenuhi Syarat/Tidak |
|------------------|-----------------------|--------------------------|---------------|-------|-----------------------|
| Annonacinone | 3 | 7 | 594 | 7,27 | Tidak memenuhi |
| Anonaine | 1 | 3 | 265 | 2,83 | Memenuhi |
| Annonamine | 1 | 2 | 196 | 3,06 | Memenuhi |
| Annopentocin A | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Annopentocin B | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Annopentocin C | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Anomuricine | 2 | 5 | 329 | 2,85 | Memenuhi |
| Gallic Acid | 4 | 5 | 170 | 0,50 | Memenuhi |
| Atherosperminine | 0 | 3 | 309 | 4,11 | Memenuhi |
| Blumenol C | 1 | 2 | 210 | 2,71 | Memenuhi |
| Catechine | 7 | 10 | 442 | 2,53 | Memenuhi |
| Chlorogenic Acid | 6 | 9 | 354 | -0,65 | Tidak memenuhi |
| Cis-corossolone | 2 | 6 | 578 | 8,30 | Tidak memenuhi |
| Citroside A | 5 | 8 | 386 | -0,59 | Memenuhi |
| Coclaurine | 3 | 4 | 285 | 2,36 | Memenuhi |
| Coreximine | 2 | 5 | 327 | 2,31 | Memenuhi |

**LAMPIRAN 7
(LANJUTAN)**

Tabel V.4
Sifat Fisikokimia Senyawa yang Terkandung Didalam Daun Sirsak Berdasarkan Aturan 5 Lipinski

| Senyawa Uji | Donor Ikatan Hidrogen | Akseptor Ikatan Hidrogen | Bobot Molekul | LogP | Memenuhi Syarat/Tidak |
|------------------------------|-----------------------|--------------------------|---------------|-------|-----------------------|
| Corosolone | 2 | 6 | 578 | 8,30 | Tidak memenuhi |
| Epicatechine | 5 | 6 | 290 | 1,55 | Memenuhi |
| Epomuricenin A | 0 | 3 | 530 | 10,95 | Tidak memenuhi |
| Epomuricenin B | 0 | 3 | 530 | 10,95 | Tidak memenuhi |
| Erigeside B | 4 | 6 | 262 | 0,84 | Memenuhi |
| Gigantetrocin A | 4 | 7 | 596 | 7,06 | Tidak memenuhi |
| Gigantetronenine | 4 | 7 | 622 | 7,61 | Tidak memenuhi |
| Goniothalamycin | 4 | 7 | 596 | 7,06 | Tidak memenuhi |
| Isolaureline | 0 | 4 | 309 | 3,17 | Memenuhi |
| Isoquercetin | 8 | 12 | 464 | -0,73 | Tidak memenuhi |
| Kaemferol | 4 | 6 | 286 | 2,30 | Memenuhi |
| Kaempferol 3-O-robinobioside | 9 | 15 | 594 | -1,58 | Tidak memenuhi |
| Kaempferol 3-O-rutinoside | 9 | 15 | 594 | -1,58 | Tidak memenuhi |
| Loliolide | 1 | 3 | 196 | 1,41 | Memenuhi |
| Muricahexocin A | 6 | 9 | 628 | 5,00 | Tidak memenuhi |

**LAMPIRAN 7
(LANJUTAN)**

Tabel V.4
Sifat Fisikokimia Senyawa yang Terkandung Didalam Daun Sirsak Berdasarkan Aturan 5 Lipinski

| Senyawa Uji | Donor Ikatan Hidrogen | Akseptor Ikatan Hidrogen | Bobot Molekul | LogP | Memenuhi Syarat/Tidak |
|-------------------------------|-----------------------|--------------------------|---------------|-------|-----------------------|
| Muricahexocin B | 6 | 9 | 628 | 5,00 | Tidak memenuhi |
| Muricahexocin C | 6 | 9 | 628 | 5,00 | Tidak memenuhi |
| Muricapentocin | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Muricatetrocin A | 4 | 7 | 596 | 7,06 | Tidak memenuhi |
| Muricatocin A | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Muricatocin B | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Muricatocin C | 5 | 8 | 612 | 6,03 | Tidak memenuhi |
| Norcorydine | 2 | 2 | 327 | 2,02 | Memenuhi |
| Quercetin | 5 | 7 | 302 | 2,01 | Memenuhi |
| Quercetin 3-O-neohispredoside | 10 | 16 | 610 | -1,87 | Tidak memenuhi |
| Quercetin 3-O-robinobioside | 10 | 16 | 610 | -1,87 | Tidak memenuhi |
| Quercetin 3-O-rutinosid | 10 | 16 | 610 | -1,87 | Tidak memenuhi |
| Reticuline | 2 | 5 | 329 | 2,65 | Memenuhi |
| Roseoside | 5 | 8 | 386 | -0,57 | Memenuhi |
| Solamin | 2 | 5 | 628 | 5,00 | Memenuhi |

**LAMPIRAN 7
(LANJUTAN)**

Tabel V.4
Sifat Fisikokimia Senyawa yang Terkandung Didalam Daun Sirsak Berdasarkan Aturan 5 Lipinski

| Senyawa Uji | Donor Ikatan Hidrogen | Akseptor Ikatan Hidrogen | Bobot Molekul | LogP | Memenuhi Syarat/Tidak |
|--------------------|------------------------------|---------------------------------|----------------------|-------------|------------------------------|
| Stepharine | 1 | 4 | 297 | 1,99 | Memenuhi |
| Vomifoliol | 2 | 3 | 224 | 1,60 | Memenuhi |
| Xylopine | 1 | 4 | 295 | 2,83 | Memenuhi |

LAMPIRAN 8

HASIL PENGUJIAN PreADME

Tabel V.5
Uji PreADME (Absorpsi dan Distribusi)

| No | Senyawa/Ligan | Absorpsi | | Distribusi |
|----|------------------|---------------------------|---------|----------------------------------|
| | | Caco-2 cell (nm sec-1) | HIA (%) | Protein Plasma Binding (%) |
| 1 | (+)-Epiloliolide | 21,55 | 93,37 | 23,88 |
| 2 | Annocatalin | 28,05 | 88,36 | 100,0 |
| 3 | Annohexocin | 10,47 | 69,75 | 99,09 |
| 4 | Annoionol A | 21,50 | 81,94 | 82,41 |
| 5 | Annoionol B | 21,15 | 68,68 | 55,76 |
| 6 | Annoionoside | 12,72 | 15,46 | 36,35 |
| 7 | Annomuricin A | 21,49 | 82,25 | 100,0 |
| 8 | Annomuricin B | 21,49 | 82,25 | 100,0 |
| 9 | Annomuricin C | 21,49 | 82,25 | 100,0 |
| 10 | Annomuricin E | 21,49 | 82,25 | 100,0 |
| 11 | Annomurine | 51,85 | 95,85 | 76,07 |
| 12 | Annomutacin | 39,14 | 89,90 | 100,0 |
| 13 | Annonacin | 42,01 | 89,00 | 100,0 |
| 14 | Annonacin A | 42,01 | 89,00 | 100,0 |
| 15 | Annonacinone | 44,85 | 92,63 | 100,0 |
| 16 | Anonaine | 47,68 | 96,49 | 65,56 |
| 17 | Annonamine | 46,96 | 97,67 | 51,24 |
| 18 | Annopentocin A | 14,19 | 82,25 | 100,0 |
| 19 | Annopentocin B | 14,19 | 82,25 | 100,0 |
| 20 | Annopentocin C | 17,12 | 83,18 | 100,0 |

**LAMPIRAN 8
(LANJUTAN)**

Tabel V.5
Uji PreADME (Absorpsi dan Distribusi)

| No | Senyawa/Ligan | Absorpsi | | Distribusi |
|----|------------------|---------------------------|---------|----------------------------------|
| | | Caco-2 cell (nm sec-1) | HIA (%) | Protein Plasma Binding (%) |
| 21 | Anomuricine | 29,57 | 93,52 | 78,81 |
| 22 | Gallic Acid | 13,84 | 53,16 | 65,38 |
| 23 | Atherosperminine | 57,30 | 100 | 76,13 |
| 24 | Blumenol C | 26,46 | 94,87 | 100,0 |
| 25 | Catechine | 0,65 | 66,70 | 100,0 |
| 26 | Chlorogenic Acid | 18,71 | 20,42 | 41,96 |
| 27 | Cis-corossolone | 47,87 | 94,98 | 100,0 |
| 28 | Citroside A | 10,62 | 40,94 | 36,37 |
| 29 | Coclaurine | 7,29 | 89,64 | 97,17 |
| 30 | Coreximine | 14,64 | 93,26 | 84,01 |
| 31 | Corossolone | 47,87 | 94,98 | 100,0 |
| 32 | Epicatechine | 0,65 | 66,70 | 100,0 |
| 33 | Epomuricenin A | 55,81 | 98,31 | 100,0 |
| 34 | Epomuricenin B | 55,81 | 98,31 | 100,0 |
| 35 | Erigeside B | 0,95 | 55,43 | 45,99 |
| 36 | Gigantetrocin A | 32,60 | 89,00 | 100,0 |
| 37 | Gigantetronenine | 32,35 | 90,43 | 100,0 |
| 38 | Goniothalamycin | 34,51 | 89,00 | 100,0 |
| 39 | Isolaureline | 56,66 | 99,65 | 71,57 |
| 40 | Isoquercetin | 9,43 | 11,77 | 59,15 |

**LAMPIRAN 8
(LANJUTAN)**

Tabel V.5
Uji PreADME (Absorpsi dan Distribusi)

| No | Senyawa/Ligan | Absorpsi | | Distribusi |
|----|-------------------------------|---------------------------|---------|----------------------------------|
| | | Caco-2 cell (nm sec-1) | HIA (%) | Protein Plasma Binding (%) |
| 41 | Kaempferol | 9,57 | 79,43 | 89,60 |
| 42 | Kaempferol 3-O-robinobioside | 9,13 | 6,28 | 42,37 |
| 43 | Kaempferol 3-O-rutinoside | 9,13 | 6,28 | 42,37 |
| 44 | Loliolide | 21,56 | 93,37 | 23,88 |
| 45 | Muricahexocin A | 8,38 | 69,74 | 99,0 |
| 46 | Muricahexocin B | 8,38 | 69,74 | 99,0 |
| 47 | Muricahexocin C | 8,38 | 69,74 | 99,0 |
| 48 | Muricapentocin | 7,71 | 82,25 | 100,0 |
| 49 | Muricatetrocin A | 21,67 | 89 | 100,0 |
| 50 | Muricatocin A | 23,11 | 82,25 | 100,0 |
| 51 | Muricatocin B | 23,11 | 82,25 | 100,0 |
| 52 | Muricatocin C | 23,11 | 82,25 | 100,0 |
| 53 | Norcorydine | 29,29 | 93,53 | 56,86 |
| 54 | Quercetin | 3,41 | 63,48 | 93,23 |
| 55 | Quercetin 3-O-neohispredoside | 10,86 | 2,86 | 45,88 |
| 56 | Quercetin 3-O-robinobioside | 7,91 | 2,86 | 43,89 |
| 57 | Quercetin 3-O-rutinosid | 7,91 | 2,86 | 43,89 |
| 58 | Reticuline | 12,25 | 93,26 | 83,95 |

**LAMPIRAN 8
(LANJUTAN)**

Tabel V.5
Uji PreADME (Absorpsi dan Distribusi)

| No | Senyawa/Ligan | Absorpsi | | Distribusi |
|----|------------------------------|---------------------------|---------|----------------------------------|
| | | Caco-2 cell (nm sec-1) | HIA (%) | Protein Plasma Binding (%) |
| 59 | Roseoside | 10,89 | 46,82 | 41,86 |
| 60 | Solamin | 40,55 | 95,03 | 100,0 |
| 61 | Stepharine | 35,22 | 95,70 | 27,65 |
| 62 | Vomifoliol | 22,23 | 90,02 | 95,30 |
| 63 | Xylopine | 49,18 | 95,78 | 60,23 |
| 64 | Simvastatin | 29,74 | 96,5 | 100 |
| 65 | Ligan Alami (PPAR α) | 18,64 | 97,97 | 88,37 |
| 66 | Gemfibrozil | 27,07 | 97,97 | 100 |

Keterangan : HIA (*Human Intestinal Absorpsi*) = 70-100% *well absorbed*
 20-70 *moderately absorbed*
 0-20% *poorly absorbed*
 In Vitro CaCo-2 cell permeability = > 70 *higher permeability*
 4-70 *medium permeability*
 < 4 *low permeability*
 Plasma Protein Binding = > 90% *strongly bound*
 < 90% *weakly bound*

LAMPIRAN 9
UJI TOKSISITAS

Tabel V.6
Uji Toksisitas

| No | Senyawa/Ligan | Ames Test | Karsinogenik |
|----|------------------|-----------------------|--------------|
| | | Mutagen / Non Mutagen | (-) / (+) |
| 1 | (+)-Epiloliolide | Mutagen | Negatif |
| 2 | Annocatalin | Non-Mutagen | Negatif |
| 3 | Annohexocin | Non-Mutagen | Negatif |
| 4 | Annoionol A | Mutagen | Negatif |
| 5 | Annoionol B | Non-Mutagen | Negatif |
| 6 | Annoionoside | Mutagen | Negatif |
| 7 | Annomuricin A | Non-Mutagen | Negatif |
| 8 | Annomuricin B | Non-Mutagen | Negatif |
| 9 | Annomuricin C | Non-Mutagen | Negatif |
| 10 | Annomuricin E | Non-Mutagen | Negatif |
| 11 | Annomurine | Non-Mutagen | Negatif |
| 12 | Annomutacin | Non-Mutagen | Negatif |
| 13 | Annonacin | Non-Mutagen | Negatif |
| 14 | Annonacin A | Non-Mutagen | Negatif |
| 15 | Annonacinone | Non-Mutagen | Negatif |
| 16 | Anonaine | Mutagen | Negatif |
| 17 | Annonamine | Non-Mutagen | Negatif |
| 18 | Annopentocin A | Non-Mutagen | Negatif |
| 19 | Annopentocin B | Non-Mutagen | Negatif |
| 20 | Annopentocin C | Non-Mutagen | Negatif |

**LAMPIRAN 9
(LANJUTAN)**

Tabel V.6
Uji Toksisitas

| No | Senyawa/Ligan | Ames Test | Karsinogenik |
|----|------------------------------|-----------------------|--------------|
| | | Mutagen / Non Mutagen | (-) / (+) |
| 21 | Anomuricine | Non-Mutagen | Positif |
| 23 | Atherosperminine | Mutagen | Negatif |
| 24 | Blumenol C | Mutagen | Negatif |
| 25 | Catechine | Mutagen | Negatif |
| 26 | Chlorogenic Acid | Mutagen | Negatif |
| 27 | Cis-corosolone | Non-Mutagen | Positif |
| 28 | Citroside A | Mutagen | Negatif |
| 29 | Coclaurine | Mutagen | Negatif |
| 30 | Coreximine | Non-Mutagen | Negatif |
| 31 | Corosolone | Non-Mutagen | Positif |
| 32 | Epicatechine | Mutagen | Negatif |
| 33 | Epomuricenin A | Non-Mutagen | Positif |
| 34 | Epomuricenin B | Non-Mutagen | Positif |
| 35 | Erigeside B | Mutagen | Negatif |
| 36 | Gigantetrocin A | Non-mutagen | Negatif |
| 37 | Gigantetronenine | Non-Mutagen | Negatif |
| 38 | Goniothalamycin | Non-Mutagen | Negatif |
| 39 | Isolaureline | Mutagen | Negatif |
| 40 | Isoquercetin | Non-Mutagen | Negatif |
| 41 | Kaemferol | Mutagen | Positif |
| 42 | Kaempferol 3-O-robinobioside | Non-Mutagen | Negatif |

**LAMPIRAN 9
(LANJUTAN)**

Tabel V.6
Uji Toksisitas

| No | Senyawa/Ligan | Ames Test | Karsinogenik |
|----|-------------------------------|-----------------------|--------------|
| | | Mutagen / Non Mutagen | (-) / (+) |
| 43 | Kaempferol 3-O-rutinoside | Non-Mutagen | Negatif |
| 44 | Loliolide | Mutagen | Negatif |
| 45 | Muricahexocin A | Non-Mutagen | Negatif |
| 46 | Muricahexocin B | Non-Mutagen | Negatif |
| 47 | Muricahexocin C | Non-Mutagen | Negatif |
| 48 | Muricapentocin | Non-Mutagen | Negatif |
| 49 | Muricatetrocin A | Non-Mutagen | Negatif |
| 50 | Muricatocin A | Non-Mutagen | Negatif |
| 51 | Muricatocin B | Non-Mutagen | Negatif |
| 52 | Muricatocin C | Non-Mutagen | Negatif |
| 53 | Norcorydine | Non-Mutagen | Negatif |
| 54 | Quercetin | Mutagen | Positif |
| 55 | Quercetin 3-O-neohispredoside | Non-Mutagen | Negatif |
| 56 | Quercetin 3-O-robinobioside | Non-Mutagen | Negatif |
| 57 | Quercetin 3-O-rutinosid | Non-Mutagen | Negatif |
| 58 | Reticuline | Non-Mutagen | Negatif |
| 59 | Roseoside | Mutagen | Negatif |
| 60 | Solamin | Non-Mutagen | Negatif |
| 61 | Stepharine | Non-Mutagen | Positif |
| 62 | Vomifoliol | Non-Mutagen | Positif |
| 63 | Xylopine | Mutagen | Negatif |

**LAMPIRAN 9
(LANJUTAN)****Tabel V.6**
Uji Toksisitas

| No | Senyawa/Ligan | Ames Test | Karsinogenik |
|-----------|------------------------------|------------------------------|---------------------|
| | | Mutagen / Non Mutagen | (-) / (+) |
| 64 | Ligan alami (simvastatin) | Non-mutagen | Positif |
| 65 | Ligan alami (PPAR α) | Mutagen | Negatif |
| 66 | Gemfibrozil | Mutagen | Negatif |