

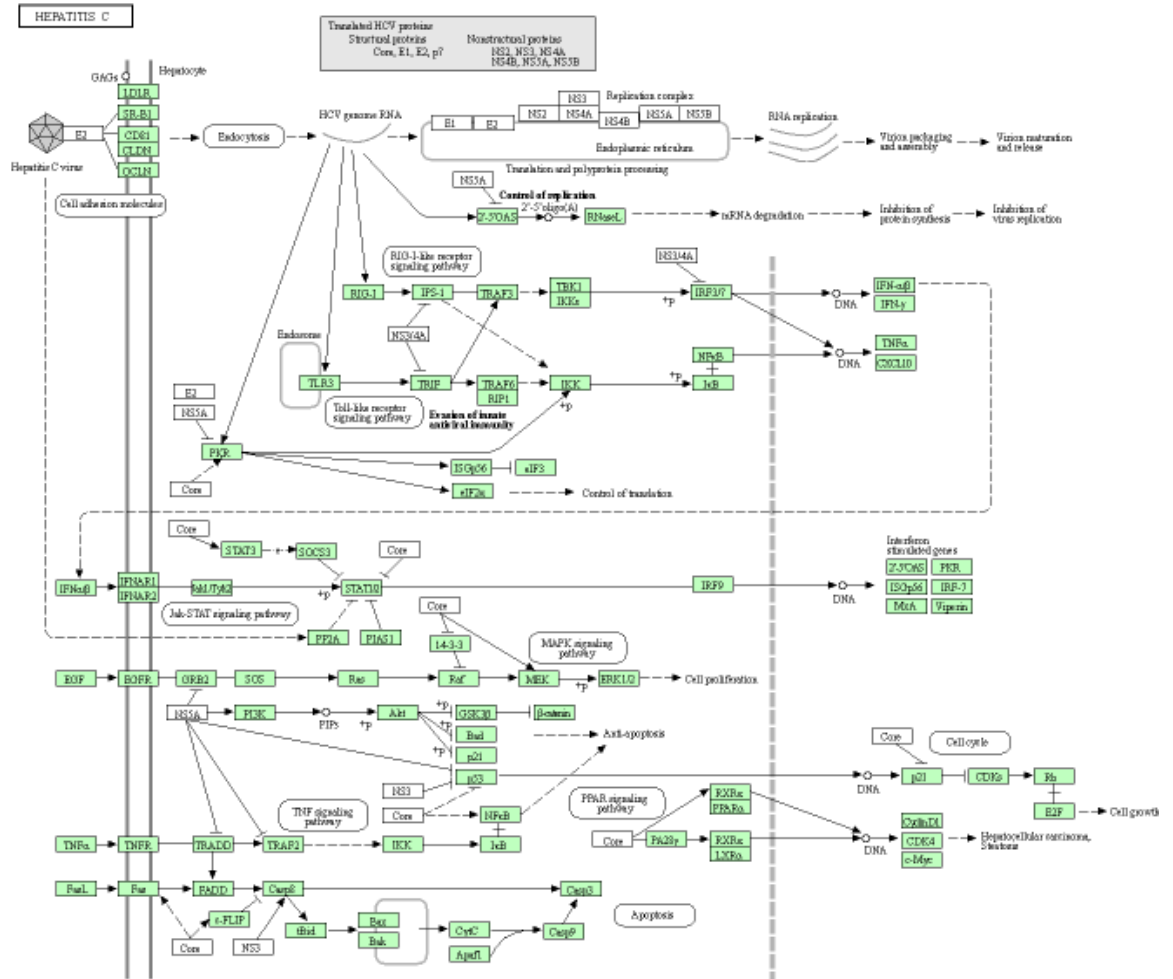
LAMPIRAN

Lampiran 1. Hasil prediksi senyawa hasil skrining target molekuler

| Senyawa | Swiss Target Prediction | SEA Search |
|------------|--|--|
| Chalepin | PDE2A, PDE10A, <u>EGFR</u> , CDK9, MAPK14, CSNK1D, PGK1, MAP3K14, ERBB2, F10, AMPD3, MET, HMGCR, NTRK1, NTRK2, NTRK3, MAPK8, MAPK9, AKT1, MTOR, PIK3CA, MAP3K5, ABL1, MAPK10, ALOX5AP, ADK, <u>CDK4</u> , CDK5, <u>CDK2</u> , CDK7, <u>CDK6</u> , CHUK, CDK1, PRKCA, GRM5, ALK, SRC, PDE4B, PLA2G7, CSNK2A1, AURKA, PTGS2, ADORA1, ADORA2A, ADORA3, <u>GSK3B</u> , ITK, CYP17A1, MAPK11, PRCP, <u>PIK3CD</u> , PKM, PIK3CD, PIK3CG, <u>IKK</u> . | <u>HIF1A</u> (Hypoxia-inducible factor 1-alpha) |
| Scopoletin | CA7, CA12, CA9, CA13, CA1, CA14, CA4, <u>EGFR</u> , CA5A, XDH, CA6, CA2, SRD5A1, CBR1, MAOA, ESR2, ALOX15, <u>CDK4</u> , MAP3K8, FGR, CA5B, <u>GSK3B</u> , PTGS2, ACHE, ESR1K1 | ERAP1, CA7, CA9, CA12, GFER, CXCL12, SLC16A3, CA13, CYP1B1, AKR1B 10, TUBB1, NFKB1, CBR1, PON1, ANTXR2, ABCG2, DNMI, MAOB, CA5B, CREB1, PGR, APP, CA6, CA4, MIF, CA14, QDPR, NQO1, CA5A, MAOA, KCND3, HSD17B3, CELA1, GLO1, ELAVL3, MAPT, KCNA3, ALOX5, CBS, AKR1B1, ALOX12, XPO1, ALOX15, SHBG, XDH, NFE2L2, ODC1, ERN1, CAMK2A, EP300, CYP1A1, PDE4D, DRD4, AKR1C4, CA1, KLK7, FOS, ABCB1, PTPRS, ACHE, HSD17B3, CELA1, GLO1, ELAVL3, MAPT, KCNA3, ALOX5, CBS, AKR1B1, ALOX12, XPO1, ALOX15, SHBG, XDH, NFE2L2, ODC1, ERN1, CAMK2A, EP300, CYP1A1, PDE4D, DRD4, AKR1C4, CA1, KLK7, FOS, ABCB1, PTPRS, ACHE, PLAA, SLC22A3, HSD17B1, IKBKG, DNMI, ESR2, MTNR1A, CISD1 |
| y-fagarine | KCNA3, PTGS1, ADORA1, ADORA2A, ADORA2B, ADORA 3, MAPK14, CHRM3, EPHX1, MAPK10, MAPK11, MAPK9, MAPK8, PDE7A, | VCANTXR2, NFATC1, NFE2L2, CYP1A1, RPS6KA2, PARP2, TNKS2, ODC1, KCNA3, TNKS, <u>TNF alpha</u> , NQO2 |

| | | |
|--------------|---|--|
| | PTGS2, TMIGD3, ESR2, FBP1, TNKS2 | |
| Arborinine | ADORA2A, KDR, ABCG2, CTSV, SIRT1, MAPK8, MAPK10, GAPDH, STS, PIM1, <u>CDK2</u> , CDK2, HDAC3, RPS6KA3, BACE2, CASP6, BCAT2, <u>CASP3</u> , MMP2 | BRPF1, SLC6A13, CREB1, TLR4, BRD1, CYP1B1, ABCG2, CTSV, ANTXR2, TAS2R31, BRPF3, SLC6A11, TRIM24, SLC6A12, NQO1, S100B, NQO2, MYLK, ALDH3A1, NUA1, NLRP3, ERN1, ABCB1, BRD7, ALOX5, ODC1, WEE1, NPEPPS, TRPM5, PTPRS, HKDC1, MAOA, FLT4, RORA, TNFRSF1A, TUBB1, BRD9 |
| Kokusaginine | KCNA3, MAPK14, ADORA1, ADORA2A, MCL1, CCKBR, PARP1, CCR1, CCR4, CCR2, MAPK10, TLR4, ERBB2 | EHMT1, EHMT2, PDGFRA, RET, PDGFRB, PGK1, PIK3R5, CYP1A1, KCNA3, NTSR1, <u>EGFR</u> , ENPP1, RPS6KB2, EPHB2, PDE3B, PDE10A, ADRA1B, KDR, TUBB1, ATM, ADRA1A, ABCG2, NQO2, SLC47A1 |
| Pseudane IX | CTSV, CTSL, EPHX1, <u>IKK</u> , EPHX1, EPHX2, F10, PTK2, MTOR, MMP9, MMP1, MMP2, PREP, CTSK, CTSS | CTSV, CTSL, OXER1, UNG, GABRA6, MPEG1, MDH2, TPO, CDC25A, NPC1, GPR84, CDC25C, NPEPPS, GLI2, PARP12, DAO, FUT7, GABRA1, PBRM1, RNASEH1, RORB, TRPM2, TLR8, GABRA2, GABRG2, GABRA3, RORA, GABRA4, PARP15, MPO, GABRB3, BRS3, MARS1, PARP4, SMARCA2, RARB, PARP14, CDC25B, ALOX5, UTS2R, GABRA5, GLI1, SOAT1, PDE5A, TYMP, AHR, KIF11, ALB, MCL1, GABRB2, NLRP3, PLA2G7, PARP1 |

Lampiran 2. KEGG pathway hepatitis C human



Lampiran 3. Data hasil penambatan molekuler

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN EGFR (5HG7) | | | | | | | |
|--|--------------------|-------|-------|-------|-----------|-------|---|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -7.35 | -7.37 | -7.36 | -7.36 | 0.008 | -7.35 |
| 1. | Chalepin | -7.77 | -7.78 | -7.75 | -7.77 | 0.012 | -7.75 |
| 2. | Scopoletin | -5.26 | -5.26 | -5.26 | -5.26 | 0.000 | -5.26 |
| 3. | γ -fagarine | -6.23 | -6.23 | -6.23 | -6.23 | 0.000 | -6.23 |
| 4. | Arborinine | -7.16 | -7.15 | -7.14 | -7.30 | 0.008 | -7.14 |
| 5. | Kokusaginine | -6.07 | -6.07 | -6.07 | -6.07 | 0.000 | -6.07 |
| 6. | Pseudane IX | -6.6 | -6.69 | -6.58 | -6.62 | 0.048 | -6.58 |
| | Kontrol Negatif | -2.84 | -2.84 | -2.84 | -2.84 | 0.000 | -2.84 |
| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN GSK3B (4BTK) | | | | | | | |
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -6.8 | -6.79 | -6.79 | -6.79 | 0.005 | -6.79 |
| 1 | Chalepin | -8.51 | -8.57 | -8.47 | -8.52 | 0.041 | -8.48 |
| 2 | Scopoletin | -5.64 | -5.64 | -5.64 | -5.64 | 0.000 | -5.64 |
| 3 | γ -fagarine | -6.05 | -6.04 | -6.03 | -6.04 | 0.008 | -6.03 |
| 4 | Arborinine | -7.22 | -7.25 | -7.25 | -7.24 | 0.014 | -7.23 |
| 5 | Kokusaginine | -7.44 | -7.44 | -7.43 | -7.44 | 0.005 | -7.43 |
| 6 | Pseudane IX | -6.76 | -6.77 | -6.73 | -6.75 | 0.017 | -6.74 |
| | Kontrol Negatif | -2.88 | -2.88 | -2.88 | -2.88 | 0.000 | -2.88 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN CASP3 (2XYG) | | | | | | | |
|--|--------------------|-------|-------|-------|-----------|-------|---|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -5.49 | -5.49 | -5.48 | -5.49 | 0.005 | -5.48 |
| 1 | Chalepin | -7.1 | -7.11 | -7.11 | -7.11 | 0.005 | -7.10 |
| 2 | Scopoletin | -5.1 | -5.1 | -5.1 | -5.49 | 0.000 | -5.10 |
| 3 | γ -fagarine | -5.03 | -5.03 | -5.03 | -5.03 | 0.000 | -5.03 |
| 4 | Arborinine | -5.5 | -5.5 | -5.5 | -5.50 | 0.000 | -5.50 |
| 5 | Kokusaginine | -4.79 | -4.79 | -4.79 | -4.79 | 0.000 | -4.79 |
| 6 | Pseudane IX | -4.53 | -4.54 | -4.52 | -4.53 | 0.008 | -4.52 |
| | Kontrol negatif | -2.72 | -2.72 | -2.72 | -2.72 | 0.000 | -2.72 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN Inhibitor of NF-kappa-B kinase (IKK) (CHUK) (4IMO) | | | | | | | |
|--|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -7.27 | -7.35 | -7.27 | -7.30 | 0.038 | -7.26 |
| 1. | Chalepin | -5.56 | -5.61 | -5.59 | -5.59 | 0.021 | -5.57 |
| 2. | Scopoletin | -6.17 | -6.17 | -6.17 | -6.17 | 0.000 | -6.17 |
| 3. | γ -fagarine | -6.22 | -6.22 | -6.31 | -6.25 | 0.042 | -6.21 |
| 4. | Arborinine | -6.47 | -6.47 | -6.48 | -6.47 | 0.005 | -6.47 |
| 5. | Kokusaginine | -6.1 | -6.1 | -6.1 | -6.10 | 0.000 | -6.10 |
| 6. | Pseudane IX | -6.81 | -6.76 | -6.66 | -6.74 | 0.062 | -6.68 |
| | Kontrol Negatif | -2.93 | -2.93 | -2.93 | -2.93 | 0.000 | -2.93 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN CDK4 (1GII) | | | | | | | |
|---|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -8.95 | -8.96 | -8.96 | -8.96 | 0.005 | -8.95 |
| 1. | Chalepin | -9.48 | -9.5 | -9.47 | -9.48 | 0.012 | -9.47 |
| 2. | Scopoletin | -5.58 | -5.58 | -5.58 | -5.58 | 0.000 | -5.58 |
| 3. | γ -fagarine | -6.38 | -6.37 | -6.37 | -6.37 | 0.005 | -6.37 |
| 4. | Arborinine | -7.59 | -7.59 | -7.59 | -7.59 | 0.000 | -7.59 |
| 5. | Kokusaginine | -6.17 | -6.18 | -6.17 | -6.17 | 0.005 | -6.17 |
| 6. | Pseudane IX | -6.8 | -6.83 | -6.68 | -6.77 | 0.065 | -6.71 |
| | Kontrol Negatif | -2.82 | -2.82 | -2.82 | -2.82 | 0.000 | -2.82 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN TNF ALPHA (4JRA) | | | | | | | |
|--|--------------------|--------|--------|--------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -11.65 | -11.65 | -11.63 | -11.64 | 0.009 | -11.63 |
| 1. | Chalepin | -9.41 | -9.42 | -9.41 | -9.41 | 0.005 | -9.41 |
| 2. | Scopoletin | -5.64 | -5.64 | -5.64 | -5.64 | 0.000 | -5.64 |
| 3. | γ -fagarine | -6.91 | -6.91 | -6.91 | -6.91 | 0.000 | -6.91 |
| 4. | Arborinine | -7.88 | -7.87 | -7.88 | -7.88 | 0.005 | -7.87 |
| 5. | Kokusaginine | -6.93 | -6.92 | -6.93 | -6.93 | 0.005 | -6.92 |
| 6. | Pseudane IX | -8.62 | -8.5 | -8.59 | -8.57 | 0.051 | -8.52 |
| | Kontrol negatif | -3.13 | -3.13 | -3.13 | -3.13 | 0.000 | -3.13 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN NS3/4A PREOTASE (4WXP) | | | | | | | |
|--|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -5.05 | -5.06 | -5.10 | -5.07 | 0.022 | -5.05 |
| 1. | Chalepin | -7.21 | -7.25 | -7.15 | -7.20 | 0.041 | -7.16 |
| 2. | Scopoletin | -4.49 | -4.48 | -4.49 | -4.49 | 0 | -4.48 |
| 3. | γ -fagarine | -5.06 | -5.05 | -5.05 | -5.05 | 0 | -5.05 |
| 4. | Arborinine | -5.52 | -5.53 | -5.53 | -5.53 | 0.005 | -5.52 |
| 5. | Kokusaginine | -5.36 | -5.37 | -5.36 | -5.36 | 0.005 | -5.36 |
| 6. | Pseudane IX | -5.48 | -5.4 | -5.46 | -5.45 | 0.034 | -5.41 |
| | Kontrol negatif | -2.88 | -2.88 | -2.88 | -2.88 | 0.000 | -2.88 |

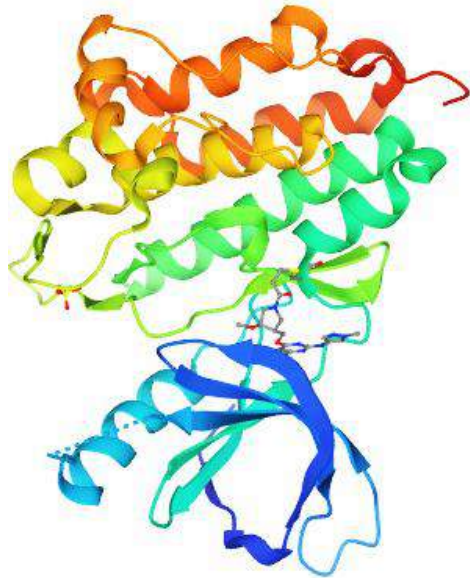
| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN NS5A (3FQQ) | | | | | | | |
|---|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -5.36 | -5.35 | -5.41 | -5.37 | 0.026 | -5.35 |
| 1. | Chalepin | -5.44 | -5.46 | -5.49 | -5.46 | 0.021 | -5.44 |
| 2. | Scopoletin | -6.41 | -6.43 | -6.4 | -6.41 | 0.012 | -6.40 |
| 3. | γ -fagarine | -6.96 | -6.99 | -6.94 | -6.96 | 0.021 | -6.94 |
| 4. | Arborinine | -5.62 | -5.62 | -5.65 | -5.63 | 0.014 | -5.62 |
| 5. | Kokusaginine | -6.57 | -6.57 | -6.57 | -6.57 | 0.000 | -6.57 |
| 6. | Pseudane IX | -5.87 | -5.88 | -5.89 | -5.88 | 0.008 | -5.87 |
| | Kontrol negatif | -3.89 | -3.82 | -3.86 | -3.86 | 0.029 | -3.83 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN NS5B (2IJN) | | | | | | | |
|---|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -9.69 | -9.6 | -9.64 | -9.64 | 0.037 | -9.61 |
| 1. | Chalepin | -7.07 | -7.67 | -7.4 | -7.38 | 0.245 | -7.13 |
| 2. | Scopoletin | -4.89 | -4.88 | -4.88 | -4.88 | 0 | -4.88 |
| 3. | γ -fagarine | -5.23 | -5.23 | -5.23 | -5.23 | 0 | -5.23 |
| 4. | Arborinine | -5.83 | -5.82 | -5.82 | -5.82 | 0.005 | -5.82 |
| 5. | Kokusaginine | -5.62 | -5.62 | -5.62 | -5.62 | 0.000 | -5.62 |
| 6. | Pseudane IX | -5.4 | -5.3 | -5.26 | -5.32 | 0.059 | -5.26 |
| | Kontrol negatif | -2.77 | -2.77 | -2.77 | -2.77 | 0.000 | -2.77 |

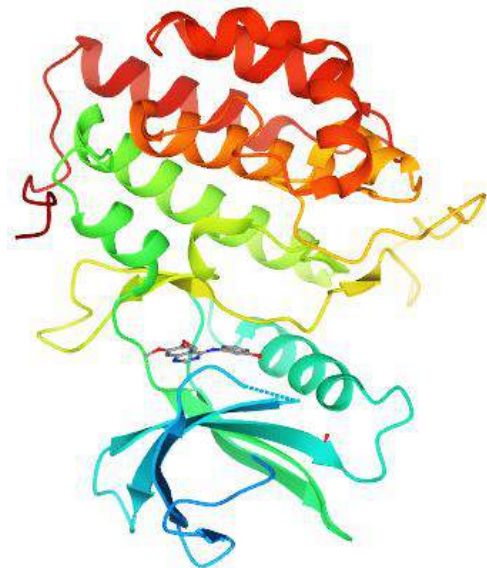
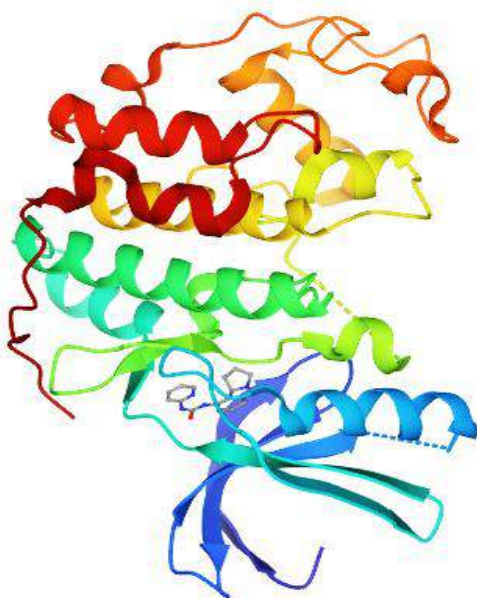
| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN CDK6 (5L2T) | | | | | | | |
|---|--------------------|--------|--------|--------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -10.37 | -10.38 | -10.38 | -10.38 | 0.005 | -10.37 |
| 1. | Chalepin | -7 | -7 | -7 | -7.00 | 0.000 | -7.00 |
| 2. | Scopoletin | -6.11 | -6.12 | -6.1 | -6.11 | 0 | -6.10 |
| 3. | γ -fagarine | -5.92 | -5.93 | -5.91 | -5.92 | 0 | -5.91 |
| 4. | Arborinine | -7.01 | -7.01 | -7.01 | -7.01 | 0.000 | -7.01 |
| 5. | Kokusaginine | -5.7 | -5.68 | -5.69 | -5.69 | 0.008 | -5.68 |
| 6. | Pseudane IX | -7.08 | -6.35 | -7.13 | -6.85 | 0.356 | -6.50 |
| | Kontrol negatif | -2.91 | -2.91 | -2.91 | -2.91 | 0.000 | -2.91 |

| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN CDK2 (2A4L) | | | | | | | |
|---|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -6.77 | -6.7 | -6.7 | -6.72 | 0.033 | -6.69 |
| 1. | Chalepin | -8.39 | -8.41 | -8.42 | -8.41 | 0.012 | -8.39 |
| 2. | Scopoletin | -6.25 | -6.25 | -6.25 | -6.25 | 0 | -6.25 |
| 3. | γ -fagarine | -6.74 | -6.73 | -6.72 | -6.73 | 0 | -6.72 |
| 4. | Arborinine | -7.49 | -7.49 | -7.49 | -7.49 | 0.000 | -7.49 |
| 5. | Kokusaginine | -6.84 | -6.84 | -6.85 | -6.84 | 0.005 | -6.84 |
| 6. | Pseudane IX | -6.32 | -6.44 | -6.4 | -6.39 | 0.050 | -6.34 |
| | Kontrol negatif | -2.96 | -2.96 | -2.96 | -2.96 | 0.000 | -2.96 |

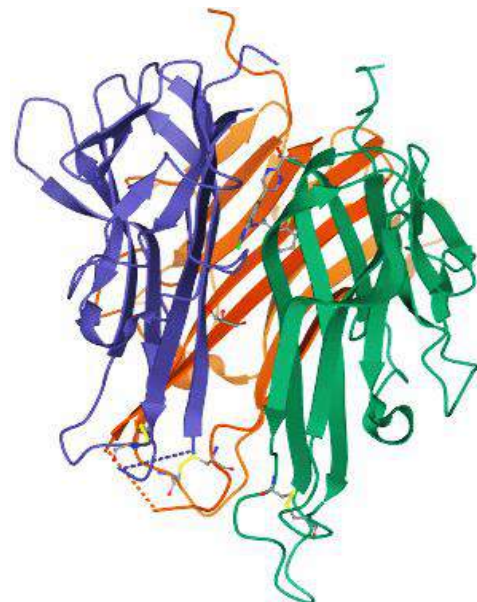
| HASIL PENAMBATAN MOLEKULER TERHADAP PROTEIN PIK3CD (6PYR) | | | | | | | |
|---|--------------------|-------|-------|-------|-----------|-------|--|
| No. | Senyawa | R1 | R2 | R3 | Rata-Rata | SD | $\Delta G_{\text{binding}}$ (kkal/mol) |
| | Ligan Asli | -9.5 | -9.5 | -9.5 | -9.50 | 0.000 | -9.50 |
| 1. | Chalepin | -8.4 | -8.3 | -8.35 | -8.35 | 0.041 | -8.31 |
| 2. | Scopoletin | -6.33 | -6.3 | -6.32 | -6.32 | 0 | -6.30 |
| 3. | γ -fagarine | -6.55 | -6.5 | -6.54 | -6.53 | 0 | -6.51 |
| 4. | Arborinine | -7.35 | -7.35 | -7.3 | -7.33 | 0.024 | -7.31 |
| 5. | Kokusaginine | -7.13 | -7.2 | -7.1 | -7.14 | 0.042 | -7.10 |
| 6. | Pseudane IX | -7.39 | -7.43 | -7.44 | -7.42 | 0.022 | -7.40 |
| | Kontrol negatif | -3.09 | -3.15 | -3.56 | -3.27 | 0.209 | -3.06 |

Lampiran 4. Struktur 3D Makromolekul

EGFR (5HG7)

GSK3 β (4BTK)

CDK4 (1GII)



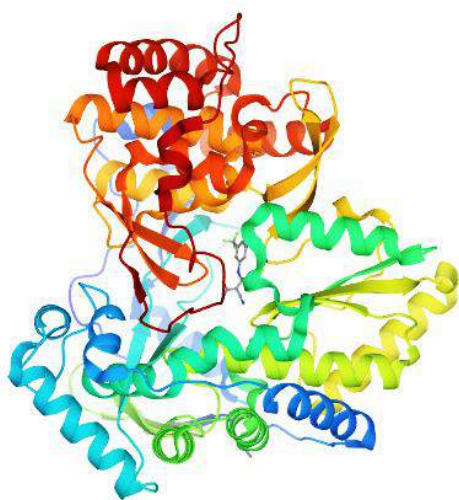
TNF ALPHA (7JRA)



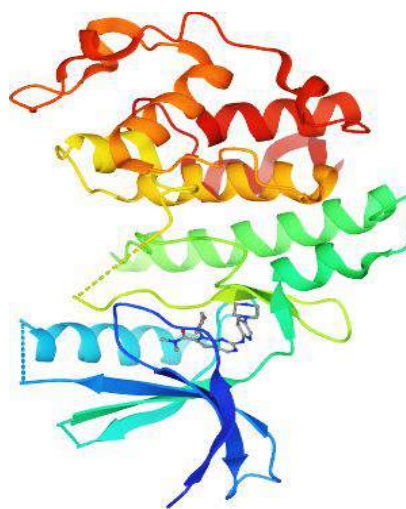
NS3-4A(4WXP)



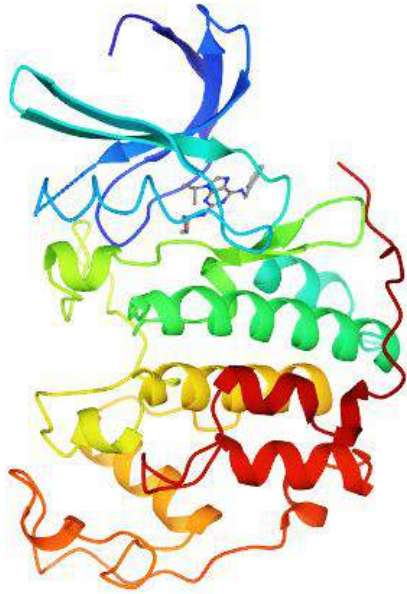
NS5A(3FQQ)



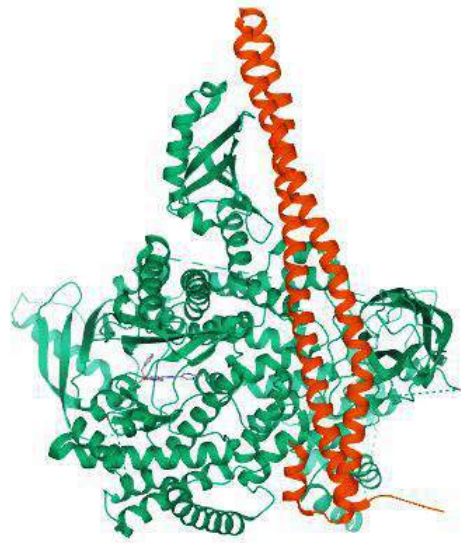
NS5B (2IJN)



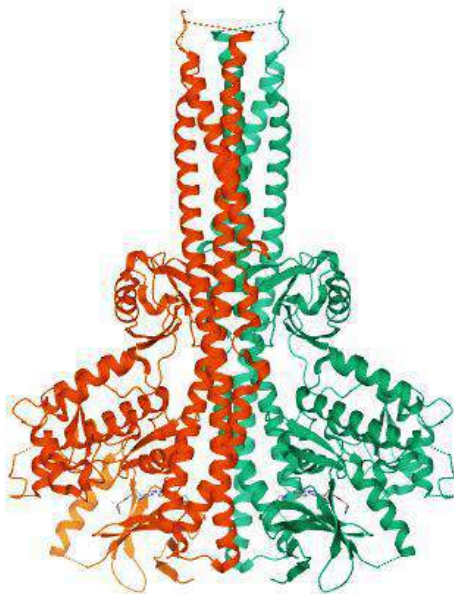
CDK6 (5L2T)



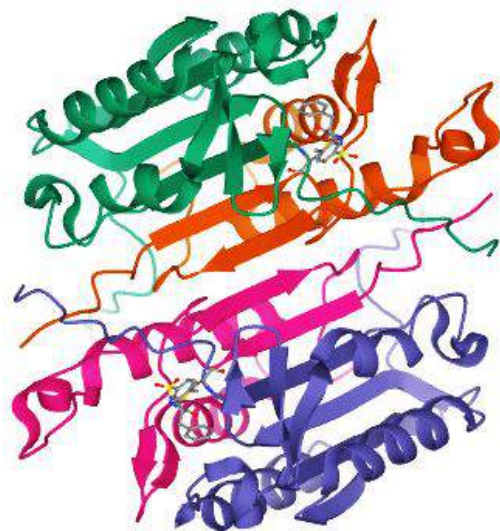
CDK2 (2A4L)



PIK3CD (6PYR)



IKK(4IM0)



CASP3 (2XYG)