

**PENAMBATAN MOLEKULER FULVESTRANT PADA RESEPTOR
ESTROGEN DAN VARIAN POLIMORFISMENYA SECARA *IN SILICO***

SKRIPSI

diajukan sebagai salah satu syarat untuk memperoleh gelar Sarjana Sains

Program Studi Biologi



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Sarjana Sains pada Program Studi Biologi,
Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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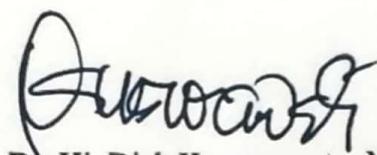
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ESTROGEN DAN VARIAN POLIMORFISMENYA SECARA *IN SILICO*

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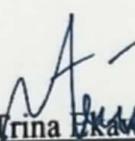
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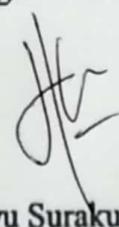
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LEMBAR PERNYATAAN

Dengan ini saya menyatakan bahwa skripsi dengan judul “Penambatan Molekuler Fulvestrant pada Reseptor Estrogen dan Varian Polimorfismenya secara *In Silico*” ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

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ABSTRAK

Penambatan Molekuler Fulvestrant pada Reseptor Estrogen dan Varian Polimorfismenya secara *In Silico*

Salah satu penyakit paling banyak menyebabkan kematian didunia adalah penyakit kanker. Kanker payudara adalah kasus paling banyak kanker yang diderita pada perempuan. ER atau *Estrogen Receptor* adalah reseptor yang berperan dalam perkembangan sel kanker payudara. Terdapat lebih dari 70% penderita kanker payudara memiliki status hormonal dengan kategori ER positif. ER alpha diketahui adalah target terapi dalam pengobatan kanker payudara ER positif. Diketahui pada ER alpha terdapat beberapa polimorfisme. Pada kasus polimorfisme ini diketahui dapat mempengaruhi fungsi protein salah satunya adalah resistensi terhadap terapi obat. Penelitian ini bertujuan untuk mengetahui interaksi Fulvestrant sebagai salah satu obat standar yang digunakan dalam pengobatan kanker payudara terhadap polimorfisme ER D538G, Y537S, Y537N, Y537C, dan L536R yang dilakukan secara *in silico*. Berdasarkan penelitian yang telah dilakukan menunjukkan bahwa Fulvestrant masih dapat direkomendasikan pada penderita kanker payudara dengan polimorfisme D538G, Y537S, Y537N, Y537C, dan L536R. Hasil temuan yang didapatkan diketahui polimorfisme pada asam amino 536, 537, dan 538 tidak memiliki peran yang signifikan dalam pengikatannya pada ligan. Hasil dari penelitian yang telah dilakukan ini dapat menjadi referensi pada penelitian yang akan datang terkait peran polimorfisme pada pengikatannya dengan ligan terutama pada reseptor ER.

Kata Kunci : Kanker Payudara, ER, Fulvestrant, Polimorfisme, Penambatan Molekuler

ABSTRACT

In Silico Approach for Molecular Docking of Fulvestrant with Estrogen Receptor and its Polymorphic Variants

One of the diseases that causes the most death in the world is cancer. The most frequent type of cancer among woman is breast cancer. ER or Estrogen Receptor is a receptor that has a role in the growth of breast cancer cells. More than 70% of breast cancer patient have the ER positive category hormonal status in. ER alpha is known to be a therapeutic target of the treatment in ER positive breast cancer. It is known that ER alpha contains several polymorphisms. In the case of this polymorphism, it is known that it can affect protein function, one of them is resistance to drug therapy. The aim of this research is to know the interaction of Fulvestrant as one the drugs that used in the breast cancer treatment with the ER polymorphisms D538G, Y537S, Y537N, Y537C, and L536R, by in silico method. Based on the research, it shows that Fulvestrant can still be recommended for breast cancer patient with the D538G, Y537S, Y537N, Y537C, and L536R polymorphisms. The findings obtained show that polymorphisms in amino acids 536, 537, and 538 do not have a significant role in binding to the ligand. The findings from this research can be used as a reference in future research regarding the role of polymorphism in binding to ligands, especially ER receptors.

Keywords: Breast Cancer, ER, Fulvestrant, Polymorphism, Molecular Docking

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