Jurnal Ilmiah

# FARMASI

(Scientific Journal of Pharmacy)

**JURNAL ILMIAH FARMASI**
(SCIENTIFIC JOURNAL OF PHARMACY)



**Penerbit**
Jurusan Farmasi Fakultas Matematika dan Ilmu Pengetahuan Alam
Universitas Islam Indonesia

**Alamat Penerbit**
Jurusan Farmasi FMIPA UII
Jl. Kaliurang Km. 14,4 Yogyakarta 55584
Telp. (0274) 896439 ext. 3047
Email: jif@uii.ac.id

# PERANAN BIOLOGI MOLEKULER DAN HTS *(HIGH THROUGHPUT SCREENING)* DALAM PENGEMBANGAN OBAT SINTETIK BARU

## *Sebuah paradigma baru dalam pengembangan obat di masa mendatang*

**Arief Nurrochmad**

Laboratorium Farmakologi dan Toksikologi, Bagian Farmakologi dan Farmasi Klinik Fakultas Farmasi Universitas Gadjah Mada Yogyakarta

## ABSTRACT

Recently, the discovery of new drugs uses the new concept by modern techniques instead of the convenstional techniques. In the development of scientific knowledge, the role of molecular biology and the modern techniques in the investigations and discovery new drug becomes the important things. Many methods and modern techniques use in the discovery of new drugs, i.e, genetic enginering, DNA recombinant, radioligand binding assay technique, HTS techniques *(High Throughput Screening)*, and mass ligand screening. In this review article, its focus in the role of molecular biology and HTS techniques *(High Throughput Screening)* which accelerated the discovery of new drugs. The role of molecular biology will be the important things on the characteristic of structure of protein target as well as receptor that interact with the drug molecule or ligand. By the modelling binding receptor technique, its will be known the conformation of binding receptor and ligand in the three dimension. In addition, by the quantum mechanics, molecular mechanics, and molecular dynamics will be identified the active sites, the consuming energy, and the conformation of the structure of molecule drug as well as the receptor when its interact biochemicaly. In other hand, the investigation of active compounds from natural resources still conducted. The investigation of active compound from natural resources, at present use the HTS techniques (High Throughput Screening) could screen thousand extracts combine with Human Genom Project data in this technique. By the HTS techniques (High Throughput Screening) will be performed screening extract from the natural resources rapidly. Active compounds resulted from this technique, subsequently identified and characterized the structure of molecules and synthesis instead of natural resources. Finally the compounds could be synthesized in the large scale.The molecular biology and HTS technique will play the big roles on the discovery of new drugs. The molecular bology techniques related the protein target and receptor have been changed the new paradigm in the design of new molecule drugs by rationally, wheares the HTS technique will accelerated sceening active compounds from natural resources.

Key words: molecular biology, HTS (High Throughput Screening), new drugs