Pra-Perancangan Pabrik dan Pengujian In Silico Aktivitas Antipiretik pada Jamu Adem Panas = In Silico Testing and Preliminary Plant Design of Antipyretic Adem Panas Mixed-Herb Formula

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Abstrak

Infeksi Saluran Pernafasan Akut (ISPA) merupakan salah satu penyakit yang memiliki gejala demam. Untuk meredakan demam, pasien biasanya mengonsumsi obat antipiretik untuk mengobati infeksi dan mencegah komplikasi. Namun penggunaan obat secara terus menerus akan meningkatkan dosis dan juga efek samping. Pengobatan alternatifnya bisa berupa jamu adem panas. Dalam penelitian ini, desain produksi formula ramuan campuran adem panas memiliki aktivitas antipiretik dan potensi ekonomi yang baik. Tahapan penelitian ini dibagi menjadi 3 tahapan yaitu simulasi interaksi zat aktif bayam panjang dengan protein target penyebab hiperglikemik, simulasi proses pembuatan ekstrak jamu adem panas dengan pelarut air, dan pemodelan reaksi enzimatik penghambatan obat non kompetitif yang merupakan hasil simulasi proses dengan besarnya hambatan interaksi hasil simulasi interaksi zat aktif. Hasil penelitian menunjukkan bahwa interaksi zat aktif kaempferia, lengkuas dan obat standar terhadap protein target menggunakan Autodock v.4.0 berhasil dilakukan dan menunjukkan interaksi penghambatan zat aktif terhadap protein. Hasil penelitian juga menunjukkan bahwa simulasi produksi ekstrak jamu adem panas dengan pelarut air menggunakan SuperPro Designer v.9.0 berhasil dilakukan dengan memberikan perkiraan produksi tahunan 52.822 botol ekstrak seharga Rp 100.000 untuk setiap botol, komposisi zat aktif yang terkandung dalam setiap 1 kapsul, dan menghasilkan rasio keuangan yang layak investasi. Kedua hasil penelitian tersebut kemudian memberikan hasil penelitian tahap ketiga untuk memodelkan reaksi enzimatik penghambatan non-kompetitif dan menghasilkan perkiraan aktivitas penghambatan masing-masing zat aktif dan obat standar terhadap protein penyebab piretik.

.....Acute Respiratory Infection (ARI) is one of the diseases that have fever as its symptoms. To relieve fever, patients usually take antipyretic drugs to treat infections and prevent complications. However, continuous use of drugs will increase the dose and side effects. The alternative medicine can be in the form of adem panas mixed-herb formula. In this research, the design of the production of adem panas mixed-herb formula has an anti-pyretic activity and good economic potential. The stages of this research were divided into 3 phases which are the simulation of the interaction of the active substance of the longevity spinach to the target protein that causes hyperglycemic, the simulation of the process of making the extract of adem panas mixed-herb formula with water solvent, and modeling enzymatic reactions of non- competitive inhibition of the drug which is the results of process simulation with its magnitude of the inhibition interaction results of the simulation of active substance interactions. The results of the study showed that the interaction of the active substances of kaempferia, galangal and standard drug to the target protein using Autodock v.4.0 was successfully carried out and showed interactions of inhibition of the active substances against the protein. The results of the study also showed that the simulation of the production of adem panas mixed-herb formula extracts with water solvent using SuperPro Designer v.9.0 was successfully carried out by providing an estimated annual production of 52,822 extract bottles for Rp 100,000 for each bottle, the composition of active substances contained in every 1 capsule, and produce a good financial ratio that is

worth investment. The two research results then provide the third phase research results for modeling the enzymatic reaction of non-competitive inhibitions and produce estimates of the inhibition activity of each active substance and standard drugs against pyretic-causing proteins.