

# Perbandingan Senyawa Fenolik Pada Ekstrak Cair Dan Ekstrak Padat Serta Pengujian In Silico Aktivitas Antiinflamasi Jamu Turun Tegang Saraf = Comparison of Phenolic Compounds in Liquid Extracts and Solid Extract as Well as In Silico Testing of Anti-Inflammatory Activity Of Jamu Neuropathic Pain Reducer

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## Abstrak

Nyeri neuropatik merupakan rasa sakit akibat gangguan susunan saraf dengan prevalensi penderita sekitar 7 hingga 10 persen populasi dunia. Pengobatan alternatif menggunakan jamu herbal diajukan sebagai pengobatan minim efek samping dan harga terjangkau. Pada penelitian ini, akan dilakukan perbandingan fenolik pada ekstrak cair dan padat Jamu Turun Tegang Saraf (TTS) yang terbuat dari pala (*Myristica fragrans*), cengkeh (*Syzygium aromaticum*) dan jahe (*Zingiber officinale*) serta pengujian in silico aktivitas antiinflamasi senyawa aktif jamu. Ekstrak cair dihasilkan dari refluks air bahan segar dan bubuk simplisia sedangkan bubuk ekstrak dihasilkan dari pengeringan oven dan pengeringan beku. Total fenolik pada ekstrak cair bahan segar dan bubuk simplisia tertinggi diperoleh sebesar 298,5 mg GAE per L dan 983,3 mg GAE/L pada konsentrasi 100.000 ppm. Total fenolik pada bubuk ekstrak pengeringan oven dan pengeringan beku diperoleh 281,7 mg GAE per L dan 999,6 mg GAE per L. Analisis LC MS ekstrak jamu menunjukkan adanya senyawa seperti gingerol, shogaol, myristicin, eugenol, adenine, dan chlorogenic acid. Pengeringan baik oven dan pengeringan beku menurunkan luas area pada senyawa aktif, tetapi pengeringan beku memiliki pengaruh penurunan lebih kecil. Berdasarkan pengujian in silico menggunakan perangkat lunak MOE, didapatkan hasil berupa afinitas pengikatan yang tinggi antara senyawa aktif Jamu TTS sebagai ligan termodifikasi dengan protein siklooksigenase (COX 1 dan COX 2) sebagai penyebab inflamasi.

.....Neuropathic pain is pain due to nervous system disorders with a prevalence of sufferers around 7 to 10 percent of the world's population. Alternative medicine using herbal medicine is proposed as a treatment with minimal side effects and affordable prices. In this study, a comparison of phenolics will be carried out on liquid and solid extracts of Jamu Neuropathic Pain Reducer (NPR) made from nutmeg (*Myristica fragrans*), cloves (*Syzygium aromaticum*) and ginger (*Zingiber officinale*) as well as in silico testing of anti-inflammatory activity of active compounds of herbs. The liquid extract is produced from water reflux of fresh material and simplisia powder while the extract powder is produced from oven drying and freeze drying. The highest total phenolics in fresh ingredient liquid extract and simplisia powder were obtained at 298.5 mg GAE per L and 983.3 mg GAE per L at a concentration of 100,000 ppm. Total phenolics in oven drying and freeze-drying extract powder obtained 281.7 mg GAE per L and 999.6 mg GAE per L. LC MS analysis of herbal extracts showed the presence of compounds such as gingerol, shogaol, myristicin, eugenol, adenine, and chlorogenic acid. Both oven drying and freeze drying decrease the area of the active compound, but freeze drying has a smaller decreasing effect. Based on molecular docking simulations using MOE software, results were obtained in the form of high binding affinity between the active compound of Jamu NPR as a modified ligand with cyclooxygenase proteins (COX 1 and COX 2) as the key role in inflammation.