PLAGIAT MERUPAKAN TINDAKAN TIDAK TERPUJI

ABSTRAK

Jamu sesak napas merupakan obat bahan alam yang sering dikonsumsi oleh masyarakat karena terbuat dari bahan alami. Meskipun demikian, beberapa produsen jamu menambah Bahan Kimia Obat (BKO) teofilin ke dalam jamu untuk mempercepat efek dari jamu, meskipun telah dilarang karena berisiko menimbulkan efek samping hingga menyebabkan kematian. Penelitian ini dilakukan untuk menganalisis dan mendeteksi adanya BKO teofilin pada jamu sesak napas dengan menggunakan metode Kromatografi Lapis Tipis (KLT) dan Spektrofotometri UV yang dikombinasikan dengan teknik kemometrika. Metode analisis yang digunakan meliputi uji kualitatif meliputi uji organoleptis dan Uji KLT yang dilakukan dengan melakukan perbandingan nilai Rf jamu dengan baku teofilin, serta uji kuantitatif-prediktif menggunakan teknik kemometrika yaitu *Partial Least Square* (PLS) dan *Partial Least Square – Discriminant Analysis* (PLS-DA). Model PLS dievaluasi dengan nilai R^2 yang mendekati 1 dan nilai *root mean square error* (RMSE) yang paling kecil. Hasil uji organoleptis menunjukkan perbedaan fisik antara jamu asli dan jamu yang dicampur BKO, sedangkan pada uji KLT, larutan sampel jamu tidak terelusi dan larutan baku teofilin memiliki nilai Rf 0,65. Dalam analisis kemometrika, model PLS menunjukkan hasil yang kurang optimal, dapat dilihat dari nilai R^2 belum mendekati 1 serta tingginya nilai RMSE. Hasil model PLS-DA memperlihatkan nilai AUC-ROC jamu sebesar 1, BKO teofilin sebesar 0,6562 dan campuran sebesar 0,8074. Sehingga menandakan bahwa metode spektrofotometri UV yang dikombinasikan dengan teknik kemometrika PLS dan PLS-DA belum optimal dalam membedakan BKO teofilin dan jamu yang dicampur teofilin.

Kata Kunci : teofilin, BKO, jamu sesak napas, kemometrika, spektrofotometri UV

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ABSTRACT

Herbal remedies for shortness of breath are natural remedies frequently consumed by the public since they are made from natural ingredients. However, some herbal remedy manufacturers add theophylline as a chemical ingredient (BKO) to herbal remedies in order to accelerate their effects, despite being prohibited due to the risk of side effects and even death. This study was conducted to analyze and detect the presence of theophylline as a chemical ingredient in herbal remedies for shortness of breath using Thin Layer Chromatography (TLC) and UV Spectrophotometry combined with chemometric techniques. Moreover, the analytical methods used included qualitative tests; such as, organoleptic tests and TLC tests, which were conducted by comparing the Rf values of herbal remedies with theophylline standards. Moreover, they included quantitative-predictive tests by using chemometric techniques, namely Partial Least Squares (PLS) and Partial Least Squares-Discriminant Analysis (PLS-DA). The PLS model was evaluated by having a value of R^2 closest to 1 and the smallest root mean square error (RMSE) value. The organoleptic test results show physical differences between the original herbal remedies and the herbal remedies mixed with BKO, while in the TLC test, the herbal remedy sample solution does not elute and the theophylline standard solution has an Rf value of 0.65. Furthermore, in the chemometric analysis, the PLS model shows less than optimal results, as seen from the R^2 value that is not close to 1 and the high RMSE value. The results of the PLS-DA model shows an AUC-ROC value of the herbal remedy of 1, the BKO theophylline of 0.6562 and the mixture of 0.8074. Therefore, it indicates that the UV spectrophotometry method combined with PLS and PLS-DA chemometric techniques is not optimal in differentiating the BKO theophylline and herbal remedy mixed with theophylline.

Keywords: theophylline, BKO, jamu sesak napas, chemometrics, UV spectrophotometry.