MANUFACTURING AND VALIDATION OF REAGENT-BASED PAPER TEST STRIP FOR PARACETAMOL DETECTION IN JAMU PREPARATIONS

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ABSTRACT

Background: Jamu *is a herbal medicine widely consumed by the public in Indonesia. However, some herbal medicines still contain medicinal chemicals, such as paracetamol, which is prohibited in natural medicines by* BPOM *Regulation No. 25 of 2023. The conventional detection methods are TLC and Spectrophotodensitometry as time goes by, these methods have become less appropriate for analysis in the field. Therefore, research for a new analytical method is needed. Reagent-based paper test strips offer a more practical and flexible approach, especially for testing paracetamol in the field or places with limited access to laboratories.* ***Objective:*** *The objective of this study was to determine the color changes and to validate the methods (specificity and limit of detection) that occurred using reagent-based paper test strips Folin-Ciocalteu reagent, Methyl Red, Lieberman 1M, and* $FeCl_3$ *in identifying paracetamol in herbal medicine.* ***Methods:*** *This study made reagent-based paper test strips to detect paracetamol in herbal medicine using Folin-Ciocalteu, Methyl Red, Lieberman 1M, and* $FeCl_3$*. The test strips were tested for response time and validation through specificity and limit of detection (LoD). Digital imaging of the strip tests was processed using a color picker application to obtain the absorbance value and calculate the LoD of each reagent. Results: The study showed the most optimal response time was 30 minutes. In contrast, the results of the specificity test showed that Methyl Red,* $FeCl_3$*, and Lieberman 1M reagents have less specificity to detect paracetamol, while the Folin-Ciocalteu reagent showed a high specificity with LoD 1.07 mg/ml.* ***Conclusion:*** *It can be concluded that the Folin-Ciocalteu reagent in the paper test strip can be used to identify paracetamol because it shows high specificity. Therefore, further research is needed to optimize reaction conditions to increase the sensitivity for the other three reagents.*

Keywords*: Paracetamol, Herbal Medicine, Test kit, Reagent, Response time, Validation*