COMPARISON OF RESPONSE TIME, STABILITY, AND BIODEGRADABILITY OF BIOCELLULOSE MEMBRANE AND BIOCELLULOSE PAPER AS NATURAL-BASED ACID-BASE INDICATOR TEST STRIP

Mucktar, Asworo*
D3 Study Program of Pharmaceutical and Food Analysis, Ministry of Health Polytechnic of Malang
**Email: putrinaylanm@gmail.com*

ABSTRACT

Background: *Measurement of the acidity of a substance can be measured using synthetic acid-base indicators, but these indicators have the disadvantage of being difficult to decompose, thus causing negative impacts on the environment. Therefore, an alternative acid-base indicator based on environmentally friendly natural materials containing natural pigments was developed. This acid-base indicator can be made by immobilizing natural material extracts containing natural pigments on membranes or biocellulose paper as a test strip medium.* ***Objective:*** *This study aims to compare the response time between biocellulose membranes and biocellulose paper, as well as to evaluate their stability and biodegradability.* ***Research Methods:*** *Eight types of natural material extracts were used, namely butterfly pea flowers, rosella flowers, dragon fruit skin, mangosteen skin, red onion skin, purple sweet potatoes, sappanwood, and turmeric, which were obtained through the maceration method. The test strip media was made from nata de coco which was formed into membranes and modified tapioca and kaolin biocellulose paper. Testing of the test strips made was carried out with preliminary tests, response time tests, stability tests, and biodegradability tests.* ***Research Results:*** *The results showed that biocellulose paper had a faster response time of 00.30 seconds compared to biocellulose membrane 01.99 seconds. In the stability test, observation of the RGB color intensity value on biocellulose paper produced an RSD value of 3.13%, while on the biocellulose membrane it was 6.48%. The biodegradability test showed that the biocellulose membrane had a better degradation rate (8.33%) compared to biocellulose paper (0.98%).* ***Conclusion:*** *Biocellulose paper was superior in response time and stability, while biocellulose membrane was superior in biodegradability.*

Keywords: *acid base indicator, biocellulose, response time, stability, biodegradability*