

Anti-Pollution Mask of *Sansevieria trifasciata* Extract

Julianto, Edwin

Tjiptadi, Jerome Adriel

This study aims to develop mask containing pregnane glycoside extract from *Sansevieria trifasciata* leaves as harmful gaseous pollutants absorbent. The leaves extraction was performed with 96% ethanol using maceration method. The presence of pregnane glycoside in the extract was identified using Liebermann-Burchard reagent, ultraviolet (UV) spectrophotometry, Fourier Transform Infrared (FTIR), and Nuclear Magnetic Resonance (NMR). Phytochemical screening methods and High-Performance Liquid Chromatography (HPLC) was conducted to identify the secondary metabolites contained in the extract. The mechanism of pregnane glycoside to absorb the artificial gaseous pollutants namely sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and formaldehyde (CH₂O) was analyzed using UV spectrophotometry and FTIR. The optimum condition in pollutants absorbing was tested qualitatively with the variation of extract concentration (0%-20%), duration of absorption (15 and 30 minutes), and type of mask's material (cotton and linen). Quantitative analysis used titration methods to obtain absorption capacity. Anti-pollution mask was developed in optimum condition of extract. The pollutants were absorbed physically and chemically, proved and confirmed by UV and FTIR spectrum respectively. Qualitative test proved that 10% extract in cotton with 30 minutes absorption time was the most optimum condition to absorb the pollutants. The absorption capacity of the mask to SO₂, NO₂, and CH₂O were 0.219 mg/cm², 4.449 mg/cm², and 24.327 mg/cm² respectively. The water content and pH of the mask were acceptable. In conclusion, it can be argued that the mask product can potentially be applied for the development of anti-pollution mask for public use.

Awards Won:

