Anti-Pollution Mask of Sansevieria trifasciata Extract

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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.

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