Removal of Hazardous Sulfur Dioxide from the Polluted Atmosphere Using Anthocyanins, Pyruvate, and Glucose

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Every year, 7 million people die around the world due to air pollution related causes, and 4,400 people die every day in China alone. Lung cancer rates have risen 465% in the last 30 years. A considerable amount of the fatalities are due to sulfur dioxide poisoning, which has been linked to asthma and emphysema, lymphoma, lung cancer, as well as aggravation of heart disease and premature death. This research has presented a novel method for removal of high concentrations of sulfur dioxide in the atmosphere using harmless, primarily plant derived chemicals. Four types of tests were run, a control group with a placebo treatment, a group treated with anthocyanins, a group treated with pyruvate, and a group treated with glucose. Tests were run in the surrounding environment to ensure no leakage, and SO2 approved respirators, were worn as a safety precaution. On average, the removal rate for the anthocyanin test group was 98.73%, and p value for the comparison to the initial concentration was 1.83x10-7. On average, the removal rate for the pyruvate test group was 84.64%, and the p value for the comparison to the initial concentration was 0.026543. On average, the removal rate for the glucose test group was 96.3%, and the p value for the comparison to the initial concentration was 9.51x10-8. This shows that these inexpensive, naturally occurring chemicals are effective in near complete removal of sulfur dioxide. This technique could be applied to facemasks, scarves, screens, air filters, filters for industrial equipment and furnaces.

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