Making New Eco-Friendly Painting Powder Using Plants

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Dancheong is a special painting powder used to paint over historical buildings in Korea. It is applied on buildings to maintain its artistic values and to protect the buildings from high temperature, high humidity, acidic rain, sunlight, and insects. Dancheong was initially made from rocks. However, this led to many problems. Not only were they easily peeled off due to weathering, but they also contained toxic substances such as heavy metals. The demand for rocks turned out to be higher than the supply. Due to these problems, rocks have been replaced by synthetic chemical paint since the 1900s. Although the chemical paint is convenient to make, it cannot effectively protect buildings. Therefore, there is a need of producing eco-friendly plant powder. This experiment was focused on developing and testing the effectiveness of the painting powder. In order to test the effectiveness of the powder, the rock Dancheong, the synthetic chemical paint, and the new eco-friendly plant Dancheong were compared in terms of resistance against high temperature, high humidity, acidic rain, sunlight, and insects. In the experiments, each pine woods were painted with rock Dancheong, chemical paint, or plant Dancheong. Next, the painted woods were exposed to high temperature, high humidity, acidic condition, sunlight, or inoculated by fungi. Then, the extent of damage and the change of chromaticity were compared between pine woods. According to the results, the plant Dancheong turned out to be the effective and longer-lasting painting material. In conclusion, the new eco-friendly plant powder will be able to play an important role in protecting our precious cultural assets.

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