Analyzing a 400-Year-Old Mystery, the Makeup Method of Producing Green With Charcoal and Beni

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By using a 400-year-old Japanese technique described in ancient books on cosmetics, green lips can be obtained upon the application of an ink base and a red lipstick called beni. This green appearance is similar to that of the green luster of many "Komachi-beni", which turns from green to red when dissolved in water. Because we were intrigued by the phenomenon of the green appearance produced using this technique, we attempted to analyze the cosmetic method. In this study, several inks were used as bases, and three types of red substances (Komachi-beni, commercial cosmetic beni, and red watercolor paint) were appplied on the top of them. The color of each combination was visually assessed, and the spectral reflectance was measured using a spectrophotometer. A green luster was observed when using either Komachi-beni or commercial cosmetic beni, and the spectrophotometer readings revealed different wavelength peaks for each substance. Therefore the factors of shining green are different. The unique feature of Komachi-beni is that it reflects green light and transmits red light, leading us to speculate that the color appearance may vary depending on the relative strength of these effects. Although the reason for the difference in the color of commercial cosmetic beni has not determined, plasmon resonance caused by polymers is one possible factor. This method enables the creationg of a desired color even in the absence of a substance with that color, making it a useful technique in the development of cosmetics.

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