

The application of Chinese herbal extracts on hair dye formulations



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Objects

Hair dyeing is a kind of cultural art that crosses international boundaries. For thousands of years, hair has been dyed first with natural dyes and then with synthetic organic dyes. At present, organic coloration is mainly used to cover the gray hair of women and men. In such cases, permanent coloration is commonly sought-after with the common treatment being oxidation dyeing. Hair color is produced inside the hair fiber through hydrogen peroxide-induced oxidation and commonly combined with coupling reactions of aromatic amines and phenols. In this study, neutral hair dyeing formulas containing Chinese herbal extracts, which are rich in polyphenols were developed. Moreover, the tensile strength of the colorized hairs were also examined and deemed superior to commercially available dyes.

Materials and methods

Sanguisorba officinalis L. *Perilla frutescens* L. Britt. and *Casalsipinia sappan* L. were purchased from Tainan local medicinal markets in 2007. Dried extracts were prepared with 10-fold aqueous solution at room temperature for 24 hours and then filtered. The procedure was repeated two times. The filtrates were combined and were concentrated under reduced pressure, freeze-dried, and stored in a closed container until use. Samples of gray hair were obtained from sixty-five year old women and were colorized by a standard oxidation hair dye procedure. Tensile tests were conducted to study the tensile strength of the colorized hair after UV irradiations.

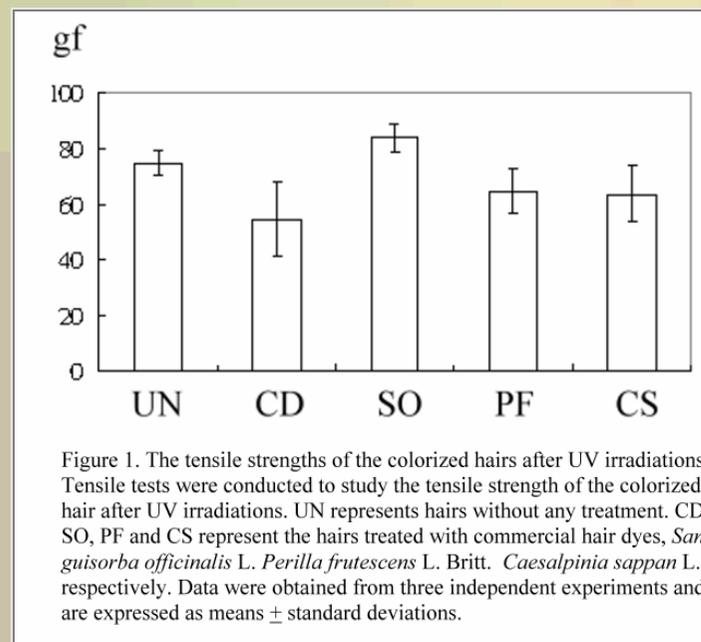


Figure 1. The tensile strengths of the colorized hairs after UV irradiations. Tensile tests were conducted to study the tensile strength of the colorized hair after UV irradiations. UN represents hairs without any treatment. CD, SO, PF and CS represent the hairs treated with commercial hair dyes, *Sanguisorba officinalis* L. *Perilla frutescens* L. Britt. *Caesalpinia sappan* L., respectively. Data were obtained from three independent experiments and are expressed as means \pm standard deviations.



before



after

Conclusion

In conclusion, we have developed new oxidative hair color formula which can be effective in color processing as commercially hair dyes. Among the Chinese herbal extracts, *Sanguisorba officinalis* L. exhibited a better protective effect on UV irradiation. In addition, the dyes provided additional photo-protective effects and contained no ammonia.

Acknowledgement

The authors thank Dr. Scott Valentine for proofreading the manuscript. We also thank Chia-Nan University of Pharmacy and Science and Ministry of Education (Grand No. B-77-039) for financial supports.