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Using rambutan leaves (nephelium lappaceum l.) as hair done in hair dye preparations

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ABSTRACT

The use of natural hair dyes is a solution to changing hair color such as gray hair. Rambutan leaves can be used as a natural hair dye, because rambutan leaves contain tannins and saponins, tannins can produce yellow, brown to golden colors. To formulate the simplex powder of rambutan leaves (Nephelium lappaceum L.) with various concentrations as a hair blackener with the additional ingredients pyrogallol and copper (II) sulfate. The dried rambutan leaves were made into powder, sifted through a 100 mesh sieve. The hair dye preparation was made with a formula consisting of rambutan leaf powder (Nephelium lappaceum L.) with various concentrations, namely formula F1 2.5%, formula F2 5%, formula F3 7.5%, formula F4 10%, with additional ingredients pyrogallol 1%, copper (II) sulfate 1%, and xanthan gum 0.5%. Water is used as a solvent. Staining is done by soaking gray hair in a hair dye preparation for 1-4 hours and observing the color change visually every hour. Then an evaluation test was carried out to evaluate the stability of the color against washing, sun exposure and irritation test on the skin with the selected formula. After soaking gray hair for 4 hours in hair dye, formula F1 gives a medium brown color, formula F2 gives a medium black color, formula F3 gives light black color and the F4 formula gives a dark brown color. The results of the evaluation test using the F2 formula showed that the resulting colors were stable at 1, 5, 10, and 15 washings, stable against sun exposure and did not cause irritation to the skin. Rambutan leaf powder (Nephelium lappaceum L.) with the additional ingredients pyrogallol and copper (II) sulfate can be formulated into hair dye preparations and gives a black color at a concentration of 5% rambutan leaf powder (formula F2).

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INTRODUCTION

The role of hair is very important to note, because hair is not only a head protector from various things such as sunburn, and so on, but it is also a valuable crown. Thick, long, black/coloured, shiny, healthy and manageable hair gives its owner its own charm (Rostamailis, et al., 2008).

Having gray hair will affect one's appearance Many efforts have been made to prevent gray hair. Most people deal with gray hair in various ways, some overcome it by pulling out gray hair and painting their hair so that it looks black again (Afianty, 2015).

The rambutan plant (Nephelium lappaceum L.) is a horticultural plant belonging to the Sapindaceae family. In addition to delicious eating rambutan fruit, rambutan plants also have a number of health benefits. The benefits of rambutan that are good for health cannot be separated from the chemical content in it. One part of the rambutan plant that can be useful for health is rambutan leaves. Rambutan leaves contain tannins and saponins (Andriyani and Iswati, 2010).

In general, natural hair dyes come from plants that contain different substances in them, and are characterized by the color they produce. Tannins are polyphenolic compounds that have a fairly high molecular weight (more than 1000). Tannins produce a yellow, brown to golden color. Tannins are soluble in water (Rizeki and Achir, 2015).

Based on the raw material, dyes are classified into two, namely synthetic dyes and natural dyes. Synthetic dyes are made by a chemical reaction which is the result of compounds derived from aromatic hydrocarbons such as benzene, naphthalene and anthracene. Natural dyes are dyes derived from natural ingredients which are generally extracted from plants or animals. Parts of plants used as natural dyes include roots, wood, leaves, seeds, fruit peels or flowers (Paryanto and Pranoto, 2015).

The use of natural hair dyes is a solution to overcome hair problems such as gray hair. Based on the description above, the authors conducted research on making hair dye using natural ingredients from rambutan leaf powder (Nephelium lappaceum L.) with the additional ingredients pyrogallol and copper (II) sulfate as color generators, making the color stronger and has good adhesion and also xanthan gum to thicken the preparation. Formulation of the problem Based on the description above, the formulation of the problem is: Can rambutan leaf powder with the addition of pyrogallol and copper (II) sulfate be formulated into hair coloring preparations?, Does rambutan leaf powder give a black color at certain concentrations?

RESEARCH METHOD

Tools and materials

The tools used in this study were an electric balance, blender, 100 mesh sieve, stir bar, parchment paper, scissors, tissue rolls, cufton buds, and the necessary glassware. The materials used in this study were rambutan leaves, pyrogallol, copper (11) sulfate, xanthan gum, water, sunsilk shampoo and gray hair taken from one salon and one hair source.

Sample collection

Sample collection was carried out purposively, ie without comparison with other regions. The samples used were rambutan leaves (Nephelium lappaceum L.) taken from Durin Tunggal Village, Pancur Batu District, Deli Serdang Regency, North Sumatra.

Sample identification

Plant identification was carried out at the Efarina Etaham Berastagi Hospital Laboratory, Karo District, North Sumatra.

RESULTS AND DISCUSSIONS

Orientation Results of Differences in Pyrogallol and Copper (II) Sulfate Concentrations on Changes in Gray Hair Color

Gray hair in a formula containing 5% rambutan leaf powder, 1% pyrogallol, and 1% copper (II) sulfate can change hair color from white to black, gray hair in a formula containing 5% rambutan leaf powder, 2% pyrogallol and 2% copper (II) sulfate also turns white gray hair black. The

concentration of pyrogallol and copper (II) sulfate to be used in the hair dye formula is 1% because at this concentration it gives a black color.

Orientation Results of Observation of Changes in Gray Hair Color with Various Treatments

The gray hair used is white. The results of soaking gray hair in 5% rambutan leaf powder showed a color change from white to medium blond, in 1% pyrogallol it was medium blond, in copper (II) sulfate it was light blue, in xanthan gum 0.5% gray hair remained white, in rambutan leaf powder 5% + green copper (II) sulfate, in rambutan leaf powder 5%+ pyrogallol 1% light blond, in rambutan leaf powder 5% + xanthan gum 0.5% medium blond, in pyrogallol 1% + xanthan gum 0.5% + copper (II) sulfate 1% dark brown, in pyrogallol 1% + copper (II) sulfate dark brown, in rambutan leaf powder 5% + xanthan gum 0.5% + pyrogallol 1% medium blond, in pyrogallol 1% + xanthan gum 0.5% medium blond, in rambutan leaf powder 5% + xanthan gum 0.5% + copper (II) sulfate 1% green in color and in rambutan leaf powder 5% + pyrogallol 1% + copper (II) sulfate 1% black.

Effect of Different Concentrations of Rambutan Leaf Powder and Soaking Time on Changes in Gray Hair Color

Effect of different concentrations of rambutan leaf powder in hair dye preparations on changes in gray hair color The results of soaking gray hair for 4 hours in hair dye from each formula that was made gave a color change to gray hair. Variations in the concentration of rambutan leaf powder can give differences in the color of gray hair resulting from the soaking process at the same time. Soaking gray hair in a hair dye preparation with several variations in the concentration of rambutan leaf powder.

Staining with formula F1 (2.5% concentration of rambutan leaf powder) gives a dark brown color. Staining with formula F2 (5% concentration of rambutan leaf powder) gives a medium black color. Staining with the F3 formula (7.5% concentration of rambutan leaf powder) gives a black color.

The effect of soaking time on the results of gray hair coloring

Based on the results of observations of the experiments that have been carried out, it is known that the length of soaking time affects the results of gray hair coloring.

Stability of hair color against sunlight

Hair color stability against sunlight is done by placing hair in the sun and exposed to sunlight for 5 hours from 10:00 WIB to 15:00 WIB.

Biological test results (irritation test)

Hair dye preparations that are intended to be marketed to consumers must be clearly marked on how to use them. In addition, the label must state whether or not an irritation test is needed before use. This test is carried out to ensure whether in the formulation of hair dye preparations there is a reaction between the components so that a substance that is irritant or toxic is formed.

CONCLUSION

Rambutan leaf powder (Nephelium lappaceum L) with the addition of pyrogallol and copper (II) sulfate can be formulated into hair dye preparations to produce colors from dark brown to medium black. A formula with a concentration of 5% rambutan leaf powder, 1% pyrogallol, 1% copper (II) sulfate and 0.5% xanthan gum already gives a black color.

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