

# Filtrates of *Curcuma domestica* and Fruit Peel of *Syzygium cumini* as an Alternative Colourant for Bone Preparations

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**ABSTRACT:** Necessary staining on the bones rub preparation so that more easily observed. However, synthetic dyes are usually expensive and carcinogenic, so as to overcome this necessary alternative dyes derived from natural materials. Zat natural colors can be obtained from plant pigments such as those found in turmeric (*Curcuma domestica*) and rind jamblang (*Syzygium cumini*). Utilization of turmeric filtrate and the filtrate rind jamblang as an alternative dye used in the dyeing process of preparation of the femoral goats. The results showed that turmeric can stain preparations filtrate bone staining better than the results shown by filtrate rind jamblang. Turmeric color shown by the preparations of bone looks brighter and sharper.

**KEYWORDS:** Curcuma dometica, Syzygium cumini, alternative colourant, preparations, filtrate,

## 1. INTRODUCTION

The bones rub preparation obtained through microtechnic method in a way boiling and rub bone thin as possible. Rub method used to obtain preparations with uniform thickness on a difficult preparation sliced like bones and teeth (Wahyuni, 2009). The bones rub preparation need to be colored to facilitate the observation of preparations under the microscope. Some of the considerations that need to be done to get the proper dyes, how to get it, time use, long use, how to process it, and how much it cost (Wahyuni, 2015). Synthetic dyes commonly used in bone is Alizarin Red staining, such as those used for coloring fetal bones of mice (Puspitasari, 2015) and bone quail embryos (Suteky, 2006). Synthetic dyes are carcinogenic and are usually expensive. To reduce the danger and cost of synthetic dyes, so use of alternative dyes (Sa'diyah, 2015).

Need to look for alternative staining solution to overcome the constraints on the coloring, such as using natural dyes. Natural dyes can be found in natural materials such as plants and animals where the material is present in the form of coloring pigment (dye). In plants, there are several natural pigments include chlorophyll, carotenoids, tannins, anthocyanins, and curcumin (Kwartiningsih, 2009). Natural ingredients which have dye that can be used as an alternative coloring materials for the bones rub preparation include turmeric (*Curcuma domestica*) and rind jamblang (*Syzygium cumini*). Jamblang has long been known as a source of natural dyes. This is because many of the tannin content in plants (Heyne, 1988). While turmeric has long been known as the main content in the rhizome consisting of essential oils, curcumin, resins, oleoresins, resins, gums, fats, protein, calcium, phosphorus and iron. Yellow dyes (curcumin) is used as a dye for human food and livestock (Rostiana, 2005). This study aims to look at the quality of dyeing using natural dyes from the filtrate turmeric and rind jamblang.

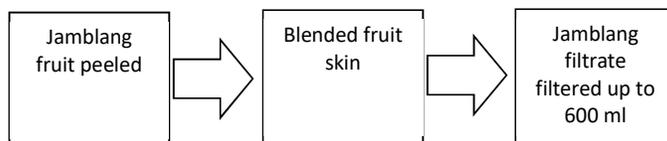
## 2. EXPERIMENTAL

### A. Materials

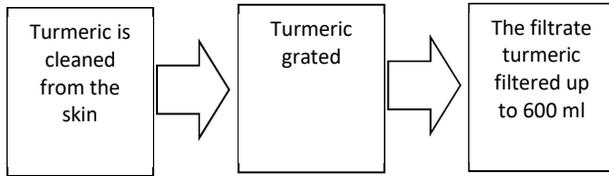
In this descriptive study done making the bones rub preparation used femur bone from goat. The dye to be used in the dyeing process is taken from the filtrate turmeric (*Curcuma domestica*) and rind jamblang (*Syzygium cumini*).

### B. Methodes

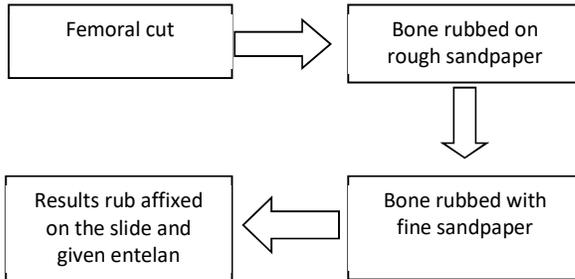
#### 1. Making the filtrate of rind jamblang (*Syzygium cumini*)



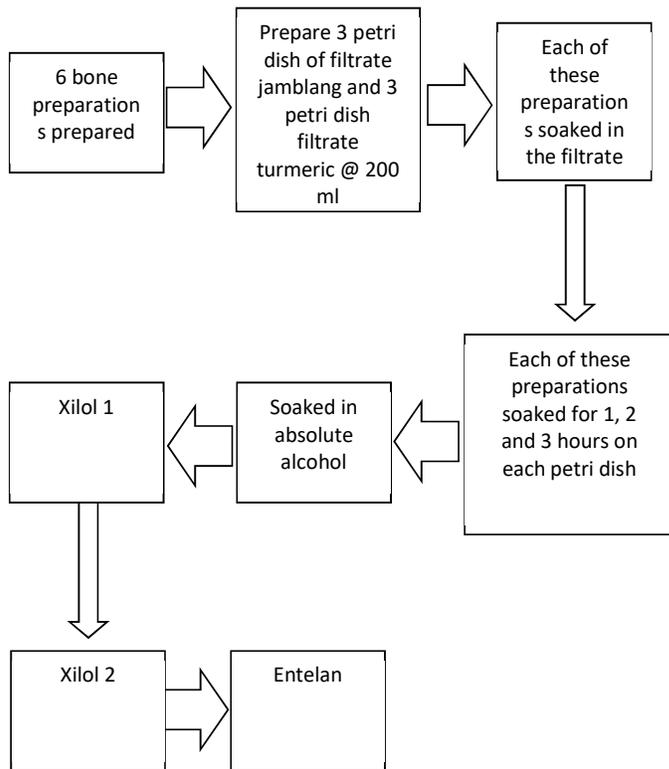
2. Making filtrate turmeric



3. Making preparations for a bone



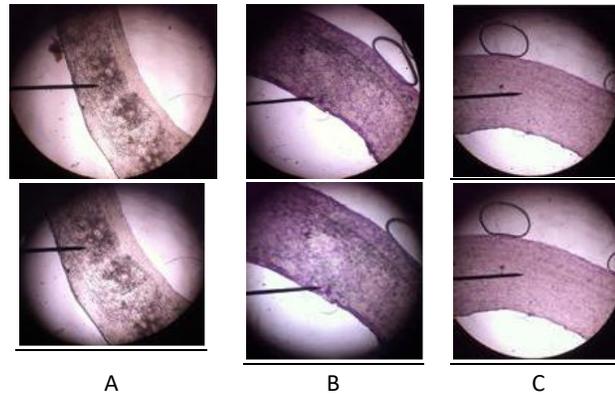
4. Staining bone preparations



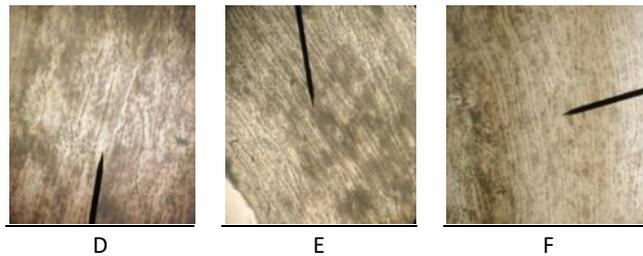
### 3. RESULT AND DISCUSSIONS

#### A. Result

The following results show the preparations that have been given skin coloration filtrate jamblang in three time variations.



**Fig. 1 Bone preparations staining results using filtration rind jamblang with treatment 1 hour (A), 2 hours (B) and 3 hours (C).**



**Fig. 2 Bone preparations staining results using turmeric filtrate with treatment 1 hour (A), 2 hours (B) and 3 hours (C).**

#### 4. Discussions

Natural dyeing preparations femur goat (*Capra aegagrus*) used filtrate rind jamblang (*Zyzigium cumini*) is done by treatment comparison of the time. In Figure 1 is shown preparations stained with filtrate rind jamblang. In figure A, the resulting color is not too obvious. Treatment within a period of 2 hours (B) produce contrasting color started clear and the structure of the bone preparation can be distinguished however, the resulting color is not suitable as coloring. While the image C by soaking for 3 hours obtained preparations with a nice color contrast and structure of the preparations bones become soft and easily distinguishable.

Obscurity preparations can be caused from a variety of factors, such as bone rubbing uneven resulting parts Havers system look less clear, especially the part that is too thick. Besides less precise solution preparation process and timing of the dye on the bone so that preparations can be stained perfectly. It is as study materials to be more careful in giving treatment on bone tissue. In addition, lack of clarity preparations can be due to a purification process using xylol after treatment administration dye, which xylol pure function is to purify the tissue (clearing), but if too long immersed in a solution xilol then it will cause the tissue to become dry, brittle and brittle so that the final outcome of the preparation of which has been so it will not last long (Suntoro, 1983).

One error in this study is one of the preparations being rubbed broken bones. Other errors because preparations were stored too long to be observed so that the bone preparation moldy. This is also due to inaccuracy in making the bones rub preparation. In the preparat that observed there are bubbles that are caused due to an error on entelan process that would make the bones rub preparations could not last long and would interfere with the process of observation of the structure of the femur bone rubbing preparations goat (*Capra aegagrus*).

In this case, the absorption of the color of the filtrate rind jamblang (*Zyzigium cumini*) can not absorb perfectly in preparations used so that necessary chemical pigment as enhancements namely liquid mordant so that the color produced can clarify the color contrast of the preparations rub femur of the goat.

Based on the observations that have been made as in Figure 2, known filtrate turmeric has a yellow dye which is able to be bound by the bone tissue. Based on the pictures K1, K2, and K3 femur goats capable stained with filtrate turmeric, from the image above staining with treatment for 3 hours absorbent better than the treatment for 1 and 2

hours, meaning treatment the longer showed quality good. Turmeric is able to influence the tissue as a whole goat femur bone, but can not color the existing organelles inside the cell because turmeric filtrate not able to color the nucleus and cytoplasm, therefore it is necessary the addition of other substances as a support to be able to color the cytoplasm and the nucleus.

One of the success factors of making preparations with bone rubbing method is a skill. However, in this study the researchers have yet to master the method, resulting in a preparation with an uneven thickness. This can make the preparations can not survive long due to air bubbles and microorganisms can easily get into the bone tissue and destroying it. Observations were too long is also one shortcoming in this study due to the preparations that are good enough to make the fungus that covers the tissue that interfere with observations.

Based on the research results show that bone has the ability to absorb dye alternative of filtrate turmeric liquid orange. Saffron orange color on color comes from pigments in turmeric is curcumin. The reasons to use an alternative form of filtrate turmeric dye is the content of turmeric that has similar capabilities with Alizarin Red dye capable of binding calcium. This coloring is due to the mechanism of curcumin acidic, will provide color on osteum (hard bone). Charge between curcumin with osteum (hard bone) bind to each other, where curcumin acidic release positive charge, while osteum alkaline releases negative charge so osteum can bind the dye of curcumin (Puspitasari, 2015).

## 5. CONCLUSIONS

This research suggests that turmeric filtrate is better than the alternative used as dye filtrate jamblang rind.

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