

The Preservation of Green Goat Skin Using Liquid Smoke from Coconut Shell

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Abstract: The objective of the research on the preservation of green goat skin using liquid smoke is to reduce the environmental contamination caused by usage of the environment-unfriendly chemical in skin preservation process. Liquid smoke is the outcome of coconut shell waste containing a lot of phenol and acid compound. It is organic material that is environment-friendly and it can inhibit the bacteria growth.

Research was conducted using 18 pieces of green goat skin. Eighteen pieces of green goat skin were divided into 2 treatments. The first stage treatment used liquid smoke as the preserving material with 0,1%, 0,5% dan 1,0% in concentrations without crystal salt and anti-bacteria material. The second stage treatment used liquid smoke with 5%, 10% and 15% in concentrations and used crystal salt without anti-bacteria material. The skin then were extended and dried in the sun. They were observed for 1 week, 2 weeks and 1 month. The results of the skin preservation then were tested in organoleptic method, including the tests for the shedding of feather and the damage of skin owing to bacteria / louse. The skin then was processed to be pickle, and the damage of pickle was tested in organoleptic method.

The result of research showed that the skin preservation for 1 month using liquid smoke, 10% in concentration, is the most effective. Usage of liquid smoke as the substitute of anti-bacteria / fungicide will reduce a part of the environmental contamination owing to usage of the environment-unfriendly chemical in skin preservation process.

Key words: green goat skin preservation; liquid smoke; environment-friendly

1 Introduction

The objective of raw skin preservation is to avoid / prevent the leather not to be spoiled because of being infected by bacterial, so it stands on the surrounding condition.

In this research, green goat skin preservation will use liquid smoke that is hoped that it can substitute chemical agent that is not familiar with environment, so from the outcome of this preservation will not

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produce waste that is very hazardous for human and environment. The liquid smoke which is used as preservation agent is obtained from the waste of coconut shell which is processed with pyrolysis at temperature of 400⁰ C and accompanied with the condensation process as cooling (Tim Coconut Center Yogyakarta, 2006).

Liquid smoke from coconut shell waste contains acid compound and phenol as well as shows high anti bacterium activity (Tranggono, Suhandi, Bambang Setyaji, 1997).

The result of research could hopefully decrease the environment pollution resulted from the administration of chemical agents which is not familiar with environment in the process of green goat skin preservation and uses coconut shell waste which hasn't been exploited optimally.

2 Experimental

2.1 Material

This research uses 18 pieces raw skin of goat. The agent of skin preservation uses liquid smoke from coconut shell and crystal salt and other materials for the pickle process.

2.2 Method

The research is done in 2 stages. The first stage of preservation process uses liquid smoke which is dissolved in 1 liter of water with concentration of 0.1%, 0.5%, and 1.0% without using crystal salt and anti bacterium substance. The second stage of preservation process uses liquid smoke with concentration of 5%, 10% and 15% without using anti bacterium agent.

- Skin is soaked in liquid smoke solution for 10 minutes then it is poured cristal salt on the surface of flesh side for the second stage administration.
- The skin is stretched out and dried under the sunrise.
- After the skin is dry, it is kept, and then it is observed for 1 week, 2 week and 1 month.
- After observed for 1 month, then, the skin is processed to be pickle leather by using liquid smoke of 2%, 3% and 4%.
- The examination is carried out organoleptically on raw skin of preservation result leather by using liquid smoke and pickle skin which is processed with liquid smoke.

3 Results and discussion

In order to know the quality of raw skin, after preserved with liquid smoke, organoleptic observation is done consisting of fur / feather falling and the damage of skin at the flesh side.

From the result of organoleptic test shown that the use of liquid smoke with concentration of 0.1%, 0.5%, 1% per liter of water for preservation of raw skin without added with salt shown that the liquid smoke hasn't functioned as anti bacterium. This is indicated with the abundance of lice / larva in the

leather in both flesh side and fur at the skin that causes the fur of leather is easy to take off and fall resulted from being damaged by bacterium or larva. After 1 week-observation is not continued because the skin has been damaged. The results of raw skin preservation are shown the figure 1-6.



Figure 1. The result of organoleptic test on raw skin preserved for 1 week by using liquid smoke with 0.1% concentration



Figure 2. The result of organoleptic test on raw skin (flesh side) preserved for 1 week by using liquid smoke with 0.1% concentration



Figure 3. The result of organoleptic test on raw skin preserved for 1 week by using liquid smoke with 0.5% concentration



Figure 4. The result of organoleptic test on raw skin (flesh side) preserved for 1 week by using liquid smoke with 0.5% concentration



Figure 5. The result of organoleptic test on raw skin preserved for 1 week by using liquid smoke with 1.0% concentration



Figure 6. The result of organoleptic test on raw skin preserved for 1 week by using liquid smoke with 1.0% concentration

Table 1 The result of organoleptis test on the feathering raw skin preserved with liquid smoke and cristal salt

Concentrati on of liquid smoke	Organoleptic Observation		
	1 week	2 week	1 bulan
5 %	• The fur falls a bit off in the side of stomach edge and ne	• The fur in the thin skin is easy to fall and easy to take o	• Almost in all sides, the fur is easy to take off and fall

	ck	ff	<ul style="list-style-type: none"> • Several lice are also found in the side of skin both in the flesh side and fur at the skin
10 %	<ul style="list-style-type: none"> • The fur is easily taken off in the side of thin stomach and little side of tail • There is a little lice in the flesh side and fur at the skin • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin 	<ul style="list-style-type: none"> • Few lice are found both in the flesh side and fur at the skin • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin 	<ul style="list-style-type: none"> • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin
15 %	<ul style="list-style-type: none"> • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin 	<ul style="list-style-type: none"> • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin 	<ul style="list-style-type: none"> • The fur is not fall • The fur is hard to take off • No lice in the flesh side and fur at the skin

From the result of observation in the table above, so the most effective preservation treatment of raw skin of goat uses liquid smoke with concentration of 10%. The observation is up to > 1 bulan, the skin is still in good condition.

The results of raw skin preservation are shown the figure 7-9.



Figure 7. The result of organoleptic test on raw skin preserved for 1 month by using liquid smoke with 5 % concentration



Figure 8. The result of organoleptic test on raw skin preserved for 1 month by using liquid smoke with 10 % concentration



Figure 9. The result of organoleptic test on raw skin preserved for 1 month by using liquid smoke with 15 % concentration

Table 2 The result of chemical test on the pickle skin by using liquid smoke of concentration of 10 % as preserver agent

Total of liquid smoke	The result of chemical test			
	Water Content (%)	Salt Content (%)	pH	Explanation
2 %	53.94	8.5 %	2.3	All results of test meet the requirement of SII.0066-75 (quality and test method of pickle skin of goat)
3 %	53.94	8.7 %	2.5	
4 %	53.94	8.8 %	2.1	

From the table above shown that the influence of the use of liquid smoke with variation of: 2%, 3%, 4% from the wet skin weight doesn't shown significant difference. The result of pH test has meet the requirement, but to store the pickle skin in long time (> 3 month), pH must be around 1-2 to reach pH: 1-2, in the process should be added acid up to 3%, but the salt solution is maintained around 10-12⁰Be, so the skin is maintained in order not to puffy because of acid.

Table 3 The result of organoleptic test on pickle skin by using liquid smoke of 4% as preserver agent

Concentration of liquid smoke	Percentage of skin damage	Explanation
5 %	8.6 %	a. Pickle skin covering quality IV
10 %	3.5 %	b. Pickle skin covering quality II
15 %	3.2 %	c. Pickle skin covering quality II

From table 3, it could be seen that, the pickle process by using liquid smoke with concentration of 5%, produces pickle skin in quality IV, with the damage level of 8,6%, this is so because the raw skin which is preserved by using liquid smoke concentration of 5%, after 3 months, the skin starts damaging, infected by bacterium / lice. Whereas if it is preserved with liquid smoke concentration of 10% and 15% produces pickle skin in quality II, after 3 months preservation there is not damaging infected by bacterium / lice.

4 Conclusions

- Liquid smoke from coconut shell waste can be used for preservation process of raw skin.
- The use of liquid smoke for preservation of raw skin of fur-bearing goat is effective to use liquid smoke concentration of 10 %.
- Liquid smoke can substitute chemical medicine as anti bacterium / fungus.
- The utilization of anti bacterium / fungus medicine can be substituted by using liquid smoke.
- By using liquid smoke as substitute of anti bacterium / fungus chemical agent, so it will be able to reduce part of environment pollution resulted from the administration of chemical agent which is

not familiar with environment in the preservation process of skin.

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