

Production Technology of Forest Honey Sialang Tree Generated by *Apis Dorsata* Bees as Potential a Local Wisdom People Nearby the Forest of Riau Province

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Abstract. Forest honey is one of the results of non-wood forest (NTFPs) is generated by the type of bees *Apis dorsata*. *Apis dorsata* bees make nests in trees beehive to the characteristics of the tree reaches 50 m high, leafy branches and leafy little. Type beehive tree is often used as a shelter for honeybees this is; *Benuang, Cempedak Air, Tualang, Kedundung forest, Balau, Kruing, Ara, Rengas*, applicability and Keranji. Indonesian people know the tree by various terms, namely: beehive (designation Sumatra), Boan (NTT), and the Tree of Lamu (Borneo). Forest Honey is a potential area of Riau's forest products it is possible to manage the general public. Regional forest areas are the most widely produced honey; Indragiri Hulu, District Kuansing and Pelalawan. Generally honey freshly harvested forests contain more water content of 24% (24-28%), while the water content of honey is based on the Indonesian National Standard (SNI) was <22%. High water content causes the honey is fermented so the quality is declining and damaged, this is a problem faced by honey producers as SMEs assisted, namely UKM Al-Hikmah and UKM Dutamas. The implementation of this service is done in the form of college activities through participatory approach to human resources that exist in the SME partners. Innovation (administration) and the filter tool to UKM assisted vacuum evaporator. Filter mesh is made of three levels with a low to a high. Vacuum evaporator is made in the form of pressure vessels operating at -60 cmHg pressure and room temperature was maintained at 38°C, equipped with a screw stirrer rotating at 60 rpm.

Keywords: *Apis, Evaporator, Honey, Filters, Sialang*

Introduction

During this forest honey management is still done traditionally. The quality of the interior forest honey Riau national market is quite good, is not inferior to Sumbawa honey and honey Arabic. However, the management is still very simple result in decreasing quality of honey that has been harvested from the forest. In some districts the management of forest honey as an individual or group has gained the attention and support of the local government, and some are still running independently. In Indragiri Hulu, there are several groups of wild honey employers, including UKM is in the village of Al-Hikmah Flower Fragrant and UKM Dutamas tapering Village, District Sand Turtle, Indragiri Hulu.

Honey obtained climber conducted a screening process, so the reduction of the water content with the evaporator. Reduction of the water content of honey is aimed to meet the criteria of Indonesia National Standard (SNI). Forest honey has a very distinctive characteristics compared to the honey farm. In general, forest honey has a fairly high water content (24-28%), which is why wild honey tends to be more watery than honey ranch. It does not mean not good quality forest honey (Sarwono, 2001).

The quality of honey is influenced by several things including honey harvesting time, the water content, the color of honey, honey flavor and aroma. When harvesting honey should be done at the right time, ie when the honey has matured and the cells begin to shut down by the honey bee. In addition, the water content contained in honey is also very influential on the quality of the honey. Good honey is honey which contains about 17-21% water content (Sihombing, 1997). To reduce the moisture content is high (24-28%) to about 17-21% were used for the drying process.

Drying is a way to eliminate most of the water from a material with the help of thermal energy from natural sources (sunlight) or artificial (drier). Typically the water content is reduced to the extent that microbes can not grow anymore (Hasibuan, 2005). Various drying techniques including

drying in the sun and shade in place, with infra-red drying, drying by desiccant, drying cabinet, drying in the canal, the barrel and cylinder solid. While examples of mechanical devices used in them Spray dryer drying, fluidized bed dryer, Vacuum Dryers, flash dryers, Rotary Dryers, Dryers and other Conduction (Kurniawan, 2012).

For the purposes of this study were selected types of vacuum dryers, because the process of removing water from a substance, along with the use of heat, the vacuum can be an effective method of drying. Drying can be accomplished in a lower temperature so that more energy efficient (Rohanah, 2006). This method is suitable for drying heat sensitive materials or are volatile because the drying time is short. Other advantage of using vacuum drying is to be used for drying materials that can not be drained if there is the presence of water. This system consists of a vacuum chamber (can be stationary or rotating), pump with valves and gauges as well as a heat source. Vacuum drying process often involves several steps the application of heat and vacuum. Reduce the pressure on the liquid surface will make the liquid evaporate without temperature rise followed.

The purpose of this study was made farmers honey production aids that meet ISO standards, which are expected to be export-oriented marketing has compliance with these standards.

Materials and Methods

Vacuum evaporator is the engine that was used to reduce the moisture content of a material is a liquid. The working principle of this machine is no direct heating, the temperature can be regulated in accordance with the wishes. The use of low temperature is accompanied by a vacuum, will keep the nutrition / nutritional products are not lost or damaged. The evaporator machine uses double jacket tube, so that the heat is not directly related to the products, but rather through an intermediary (medium) water. Design results shown in Fig. 1 below.

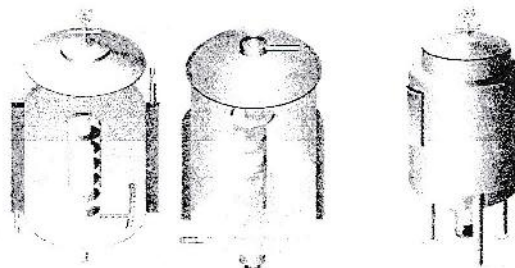


Figure 1. The design of vacuum evaporator

The materials were used as in the following table:

Table 1. Materials used for vacuum evaporator

No	Name of Component	Specifications
1	Plate in the bottom of the tube	2mm : SS-316
2	Plate jacket	1.5mm : SS-201
3	Plate upper cover	2mm : SS-304
4	Input - output pipe	SS 3/4 inc
5	Sicket and valves	brass
6	Vacuum pump	1.5 HP
7	Gear motor	1/4 HP
8	Control Panel	1 Set
9	Hetaer	300-500 Watt
10	Seal tutup	Sikasil
11	Water level kontrol	glasses
12	Screw pum	1 set : SS-316
13	Frame of Evaporator	1 set

Consideration of the selection of stainless steel (stainless steel, steel SS 316 and SS 201) as the first and foremost choice in applications of this research are as follows:

1. Stainless steel chemical contamination is relatively low on food
Stainless steels have sufficient resistance to a wide range of food manufacturing applications to contamination of the food material element. Through the selection of the appropriate grade of stainless steel, almost no metal contamination of processed food products meant to, changes in taste, and color of food.
2. Able to clean and resistant to bacteria
High-grade stainless steel, smooth surface of a material positive impact easily cleaned from outside contamination. The hardness and impact resistance of stainless steels also have a positive impact when the cleaning process is done component. High corrosion resistance allows us to be able to use the cleaning solution and disinfektant classified corrosive.
3. Mechanical properties are quite good overall
Strength, durability and high abrasion resistance in austenitic stainless steels provide positive value in use for applications in the food and beverage industry.

Results and Discussion

Here are the results of the manufacture and assembly of equipment and devices filter vacuum evaporator honey as in Figure 2 below:

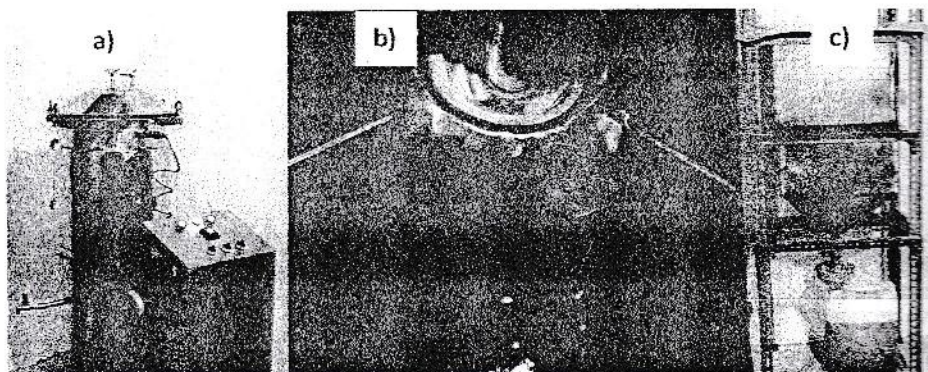


Figure 2 (a) Vacuum evaporator, (b) Screw mixer and (c) filter tool honey

- Indirect heating with low temperature
Evaporation occurs in the tube / boiler in a low-temperature processes indirectly. Heating source is obtained from the water heater through an intermediary automatic with double jacket system. Optimal temperature 380C automatic setup via the control panel. It aims to maintain the physical and chemical quality of honey.
- Process Vacuum with Vacuum Pump 1.5 HP
Reduction in water content can be optimized through the process of evaporation in vacuum tubes diruangan process. Vacuum process runs automatically with pressure -60 psi. With this vacuum evaporation system will take approximately 3-4 hours faster process.
- Screw Pump
With features screw pump will pump circulators conserve moisture in the processing of honey. The working principle of screw pump is pumping honey from the bottom of the tube vertically until an overflow occurs honey form a continuous waterfall, it helps circulation evaporation effectiveness of honey. Screw pump rotates at speeds below 50 rpm. Screw pump and handle mixer driven by a motor include the gear box.
- Control Panel
Vacuum Evaporator powered engine features control panel with indicator The heating temperature and vacuum pressure. There is a LED button control for manual operation (on / off the motor, heater and vacuum) control panel allows the production process works

automatically by setting the digital time, so expect the production process more efficient and effective and efficient in the use of electric power.

- Process tube material S 316
SS316 material is the best quality ingredients for food processing. The use of materials with a thickness of 2mm SS316 tube well enough to be applied in low temperature evaporation process with vacuum mechanism. Cylindrical tube with a closed bottom and parabolic tubes / domes required bending process, so the tube will be solid and strong when applied with pressure -60 psi vacuum process.

Conclusion

Tool filter made of stainless steel material SS 304 with a two-level filtering with mesh 2 and 5 microns. The screening process is done by gravity. Tool-reducing moisture content is created in a vacuum evaporator equipped with a screw stirrer rotating at 60 rpm with evaporation at a pressure of -60 psi and a temperature of 38°C.

Forest honey production technology by means of filters and vacuum evaporator to process raw materials that are not contaminated with outside air. The process of evaporation produces honey with a moisture content below 22% without causing damage to the content of essential nutrients in the diet.

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