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## Increasing Production of Freedia Herbal SME Hippocrates Medika Palembang with the Application of Extraction Machine Technology

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### ABSTRACT

Indonesia is the second largest biodiversity-rich country in the world. Abundant biodiversity makes Indonesia rich in the potential of plants to be used as a variety of flavorful vegetables, dried fruit, medicine, and medicinal plants packaged in the form of herbs. Freedia is the flagship product of this SME, which is downstream from the innovative products of Rachmat Hidayat and the team. Freedia is an herb that is processed as a brewed drink to overcome diabetes mellitus disorder. The implementation of this activity uses methods of observation, interview, design, manufacturing, trial, application, and monitoring. Based on the results of the application of extraction machines in SME Hippocrates Medika, it can be concluded that the existence of these machines greatly supports the production process of freedia herbs three times more than before.

### 1. Introduction

Indonesia is the second largest biodiversity-rich country in the world. Abundant biodiversity makes Indonesia rich in the potential of plants to be used as a variety of flavorful vegetables, dried fruit, medicine, and medicinal plants packaged in the form of herbs. Based on data from the Ministry of Trade and Industry in 2017 in Indonesia, there were 64 herbal medicine industry entrepreneurs. Small and medium enterprises (SMEs) Hippocrates Medika addressed in Kenten, Ilir Timur 3, Palembang, South Sumatra, Indonesia, is one of the growing herbal medicine businesses. This SME can produce about 200-300 grams of extract daily from processing about 2-3 kg of simplisia. The daily production of SMEs is quite varied

per day depending on the condition of their employees. SME Hippocrates Medika has been running for 2 years and has 3 employees. Where the process of marketing products is done by offering products to the market or drug stores around the production house. Freedia is the flagship product of this SME, which is downstream from the innovative products of Rachmat Hidayat and the team. Freedia is an herb that is processed as a brewed drink to overcome diabetes mellitus disorder.

Based on observations at SME Hippocrates Medika, the process of making herbs begins with the cleaning of ingredients in the form of leaves and herbs to be further dried and mashed so that simplisia is obtained. Simplisia is then carried out the extraction process by infusion method manually. The process

takes approximately 8 hours. Based on interviews with SME Hippocrates Medika obtained the result that there are obstacles in the extraction process, where this extraction process takes almost 4 hours because it is done manually. This certainly has an impact on the productivity of SME Hippocrates Medika, so the solution needs to be pursued.

A new business is said to be productive if it can be implemented efficiently and effectively or can use minimal resources. So, increasing the productivity of a business can be done by increasing the efficiency and effectiveness of the business.<sup>1-3</sup> There are several efforts that can be made by employers to improve the efficiency and effectiveness of their business in the form of improving the skills or skills of their employees and upgrading their production equipment.<sup>4-6</sup> The latter way is rarely taken by small entrepreneurs due to capital limitations and limited knowledge in access to information, especially related to the development of increasingly sophisticated production equipment. Another case with large entrepreneurs who tend to prefer to upgrade their production equipment to increase the efficiency and effectiveness of their business.<sup>7-8</sup>

Based on the description of the problem, the proposer intends to help overcome the production problems faced by SME Hippocrates Medika through the procurement of simplisia automatic extraction tool

technology. It is expected that by using these machines, the quality and quantity of Hippocrates Medika SME products can be improved. This condition is highly desired by SME entrepreneurs because continuity or quality of production can be maintained. This will have an impact on the increasing income earned by SME Hippocrates Medika and increasing welfare, both employers and employees.

## 2. Methods

The implementation of this activity uses methods of observation, interview, design, manufacturing, trial, application, and monitoring, as shown on the flow chart in figure 1. Data retrieval is an observation activity carried out to find partner conditions to support the manufacture of appropriate technology to be applied, while the data needed is the quantity of simplisia in 1 production, the length of the extraction process in 1-time production, and the quality of the extract produced.<sup>9-12</sup> Designing is done using 3D modeling software. Further validation is done to determine whether the design of the resulting tool is in accordance with the expected external target. If the design is valid, then proceed to the creation of a blueprint (working image), while if it is not valid, then back again to the design process. The next stage is the manufacture of extraction tools made in the workshop of Berkah Abadi Palembang.

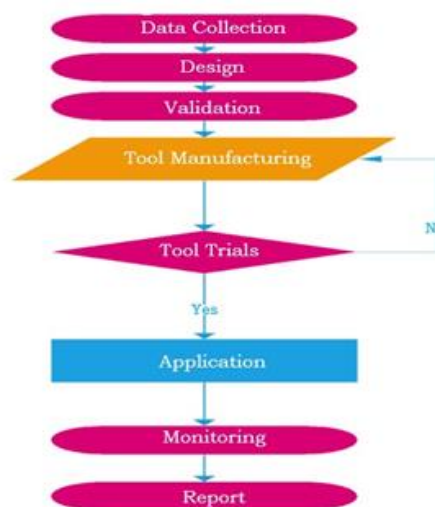


Figure 1. Flow chart of program implementation.

The next stage is the trial of extraction tools to find out the function of each machine component made. After the function test, the test is carried out by processing the simplisia in accordance with the capacity of the machine to know the performance of the tool. If the tool is made less in accordance with the expected, then the repair process is carried out to the machine. After going through the next stage, the tool is sent to the partner to be applied or used.

Furthermore, monitoring the productivity of SME Hippocrates Medika, as well as exploration of inputs, criticisms, and suggestions for future improvements.

### 3. Results and Discussion

The extraction tool serves to perform extraction from simplisia so that concentrate extract is produced, as seen in Figure 2. The extraction tool has specifications, as seen in Table 1.



Figure 2. Extraction tool.

Table 1. Extraction equipment specifications.

No.	Description	Information
1.	Dimensions	L = 200 cm, W = 120 cm, H = 120 cm
2.	Power vacuum	1HP
3.	Mixer	1 HP
4.	Material	Stainless steel 304

The workings of this machine start by inserting the simplisia into the extraction tube, then pressing the switch on. After that, the electric motor will rotate the main shaft and gearbox, then continue with the activation of vacuum evaporation so that extract powder will be obtained. Before the machine is applied

in SME Hippocrates Medika, it is necessary to conduct a trial to find out the performance of the machine. Based on the results of the trial obtained that all engine components can function properly so that the machine can be sent to partner SMEs so that it can be used in supporting the production process.

Table 2. Results of application of extraction machine.

Description	Before the application of the machine	After the application of the machine
Simplicia extraction process 5 kg	5 hours	1 hour 30 minutes
Extract quality	Less hygienic	More hygienic because it does not come into direct contact with hands and machines using foodgrade material (stainless steel)
Production capacity	5 kg	15 kg
Employees	Easily tired	It is not easy to get tired because if it just presses the switch on, then the machine will work

#### 4. Conclusion

Based on the results of the application of the extraction machine at the SME Hippocrates Medika, it can be concluded that the existence of this machine greatly supports the production process of freedia herbs to be three times more than before.

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