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The total plate count of beras kencur herbal medicine in sub-district market Tulungagung city

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ABSTRACT
Herbal medicine is a traditional drink made from natural ingredients for human health and is made with methods and equipment that are easier in its simplicity which often do not pay attention to hygiene factors and can be a medium for disease transmission. Based on the Regulation of the Head of the Republic of Indonesia Drug and Food Control Agency No. 12 of 2014 concerning requirements for drug fluids in the form of microbial contamination / ALT ≤104 colonies/ml. The purpose of this study was to study the estimated numbers of traditional herbs sold in the Tulungagung District market. The research design used is descriptive. The sampling technique uses a total sampling technique of 6 samples from 4 different markets. Sample meeting with the ALT method in May 2018 in the microbiology laboratory of STIKes Hutama Abdi Husada Tulungagung. The results of the study found that three out of six samples of traditional herbal medicine of kencur rice exceeded the microbial contamination threshold with an average yield of 1 x 107 CFU / ml. The conclusion of the study is that 50% of the sample is not suitable for consumption and 50% of the sample is suitable for consumption. This requires Regulation of BPOM RI Number 12 Year 2014 Regarding Quality Requirements for Traditional Medicines, namely ≤104 colonies/ml. Herbal traders need to pay attention to raw materials, processing, equipment, air used, and containers used

INTRODUCTION

Indonesian people have been familiar with traditional medicine for thousands of years, where people use efficacious plants as traditional medicines[1]. Plants that are used as medicine are largely scientifically proven efficacy[2]. According to WHO, 65% of the population of developed countries have used herbal medicines[3]. The type of traditional medicine known to the general public is herbal medicine[4]. The 2010 Basic Health Research Data shows that 60% of Indonesia's population over the age of 15 states that they have consumed herbal medicine and felt its benefits[5]. For the people of Indonesia, herbal medicine is a hereditary recipe from ancestors that can be maintained and developed[6]. Utilization of herbal medicine carried out from generation to generation cannot be separated from the role of parents in preserving culture[7]. Herbal medicine is the result of herbs native to nature that do not get additional chemicals[8]. The main benefit of herbal medicine or traditional medicine is to maintain health, but some are used as a

treatment for a disease[9]. Side effects of traditional medicine are considered smaller if used appropriately[10].

One of the most popular herbs among Indonesian people is the beras kencur herbal medicine. Kencur is a medicinal plant that can be used as a raw material for health drinks, medicine, flavorings or cosmetic ingredients[11]. In the health sector, it can act as an antifungal agent. Antifungal chemicals include flavonoids, thamin, cineol, and saponins[12]. The demand for kencur in the market is very high so it is necessary to develop kencur cultivation in vitro to be able to meet market demand [13]. In addition to kencur, plants that have the potential as medicine are moon flowers that are effective in treating stomach aches, diarrhea, bloating and anti-inflammation[14].

A large number of traditional medicines on the market makes the government issue regulations regarding the need to prevent the circulation of traditional medicines that do not meet the safety and quality requirements stipulated in the Decree of the Ministry of Health of the Republic of Indonesia Number 661 / MENKES / SK / VII / 1994. Some drug safety parameters include total plate count (TPC) test, mold/yeast number test, aflatoxin test, and metal contamination test. The total plate count (TPC) is one of the safety parameters of the drug that is used as a guide to what level of manufacture of traditional medicine in implementing Good Manufacturing Practices (CPOTB)[15]. Based on the Regulation of the Head of the Republic of Indonesia Drug and Food Supervisory Agency No. 12 of 2014, regarding the quality requirements for traditional medicines, it is said that the quality requirements for liquid medicine in the TPC value ≤ 104 colonies / ml[16]. In addition to the TPC test, herbs need to be tested for MPN values to determine the possibility of Coliform bacteria where the MPN results must be negative[17].

Making traditional herbal medicine does not require compulsory registration, but in the manufacturing process must pay attention to the cleanliness of raw materials, tools, and hygiene of herbal makers, because it is the material most easily contaminated by microorganisms[18]. Herbal medicine can be a medium of disease transmission for consumers if the selection of raw materials and the manufacturing process is not hygienic. Various pathogenic microbes can be transmitted through water which is one of the main ingredients in making herbal medicine[19]. Pathogenic bacteria that can contaminate herbal medicine include E-coli, Staphylococcus aureus, and Salmonella thyposa[20].

In the Tulungagung region, there are still many traditional herbal medicine sellers who usually sell their herbal medicine in the traditional market. One type of herbal that is of interest to consumers is kencur rice herbal medicine. Kencur rice herbal medicine is made from nutritious rice and kencur ingredients that can eliminate fatigue, prevent coughing, filter out sounds and increase appetite[21].

Based on the results of previous studies related to traditional herbal medicine, namely the Tivani study (2018) in Tegal Regency where the results of research on carrying herbs have not met the microbiological requirements because of the TPC value ≥ 104 colonies / ml[1]. Other studies have shown that total bacterial contamination from four samples did not meet microbiological requirements. In the study of kencur rice herbal medicine conducted on Jl Sumatra, Sumbersari District, Jember Regency, said 60% of kencur rice herbal medicine contained E-coli bacteria[5]. In the study of kencur rice herbal medicine conducted by Maulida, said 60% of kencur rice herbal medicine on Jl Sumatra, Sumbersari District, Jember Regency contained E-coli[23]. Many studies have shown that consumption of food whose microbiological value exceeds the threshold can cause diarrhea, dizziness, nausea, vomiting, and fever[24].

The sellers of medicinal herbs in the Tulungagung regency, especially in the sub-district area of the city, still use traditional and simple herbal-making techniques so that they are assumed to pay less attention to the cleanliness and hygiene of their production. Therefore it is necessary to examine the Total Plate Figures to determine the quality of herbal medicine in microbiology.

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MATERIALS AND METHODS

This study uses descriptive non-analytic methods. The population used is all herbal medicine sold by traditional herbal medicine traders in the sub-district of Tulungagung City. The samples obtained were examined by the TPC method which amounted to 6 samples of kencur rice herbal medicine. Data collection is done through indirect observation techniques. Data analysis was performed by editing, coding and tabulating in the table model.

RESULTS AND DISCUSSION

Based on research results The Total Plate Count Of Beras Kencur Herbal Medicine In Sub District Market of Tulungagung City 2018 obtained the following results :

Tabel 1. The results of the examination of total plate count values on beras kencur herbal medicine in Sub District Market of Tulungagung City 2018

No.	Sample	TPC value	Explanation
1	Kode A	1,2 x 10^6 koloni/ml	Exceeding the microbial contamination threshold
2	Kode B	4,8 x 10^3 koloni/ml	Do not exceed the threshold of microbial contamination
3	Kode C	1,5 x 10^6 koloni/ml	Exceeding the microbial contamination threshold
4	Kode D	3 x 10^7 koloni/ml	Exceeding the microbial contamination threshold
5	Kode E	3,3 x 10^3 koloni/ml	Do not exceed the threshold of microbial contamination
6	Kode F	3,2 x 10^3 koloni/ml	Do not exceed the threshold of microbial contamination

Based on the results of the TPC examination in Table 1, it was seen that 3 out of 6 samples of traditional herbal medicine of kencur rice (50%) exceeded the limit of microbial contamination with the highest total bacterial amount of 3 x 107 colonies/ml. Based on the rules of BPOM RI No. 12 of 2014 concerning Quality Requirements for Traditional Medicine that the threshold for microbial contamination is ≤ 104 colonies / ml[16]. As research has been done on the highest bacterial beras kencur of 267.6 x 108 CFU / ml[25]. In another study from 10 samples of kencur rice found 6 samples containing E-coli bacteria[26]. Contamination can occur since the beginning of making herbal medicine. Unhygienic environmental factors play a major role in herbal contamination[17]. In addition to environmental factors, raw material factors such as simplicia, water, and herbal medicine-making equipment can trigger bacterial contamination. Judging from the raw materials used, the possibility of contamination can occur from unhygienic storage of raw materials, open spaces, such as placing raw materials on an uncovered floor or cabinet. In the process of making herbs, mold contamination can occur during the process of pounding rice. The washing process of a collision tool with unhygienic water can trigger bacterial contamination. In the sales process, the source of contaminants comes from water used to wash glass and bottles[23].

CONCLUSIONS

The conclusion of the study “The Total Plate Count of Beras Kencur Herbal Medicine In Sub-District Market Tulungagung Cyti 2018" was 3 out of 6 samples of traditional herbal medicine of kencur rice (50%) exceeded the limit of microbial contamination with the highest total bacterial amount of 3 x 10^7 colonies/ml.

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