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Utilization of Saga Leaves to Support Traditional Medicine

Nerisa Dian Ariani[1], Khoirul Hidayat[2], Darimiyya Hidayati[3]
[1,2,3] Agroindustrial Technology, Trunojoyo University

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Abstract

The Abrus precatorius is widely grown and cultivated on the island of Madura, especially in the Sumenep district. The leaves of the Saga plant have bioactive content that is antibacterial, antifungal, and antioxidant. Besides that, flavonoids and steroids are the most abundant content of saga leaves, which can be used to cure diseases such as tonsillitis and throat and canker sores. Canker sores (Recurrent aphthous Stomatitis) are small sores in the oral cavity, tongue, or cheeks, characterized by a stinging or burning sensation. This research aims to find out the best tea bag formulation. This research method uses a completely randomized design with 2 treatments. This research shows that a particle size of 40 mesh and a brewing time of 5 minutes produce teabags with a greenish-white color and less sediment. A particle size of 60 mesh and a brewing time of 5 minutes produce tea with a green color and more sediment. A particle size of 80 mesh and a brewing time of 10 minutes makes for the best formulation. This formulation produces a deep green color and more sediment.

✉ Authors
Nerisa Dian Ariani
Email:
nerisaaaariani@gmail.com[1] *-

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Introduction

Canker sores (Recurrent Aphthous Stomatitis) are small sores in the oral cavity, tongue, or cheeks, characterized by a stinging or burning sensation (Amirudin *et al.,* 2019). Canker sores have the form of white to yellowish spots, which are often found singly or in groups. This disease interferes with masticatory function, which can cause problems with speaking, chewing, and swallowing and even cause a decline in body condition if it occurs over a long time and frequently (Anggraini *et al.,* 2023). The factors that influence the appearance of canker sores include stress, wounds in the mouth, lack of vitamin C, taking too many antibiotics, and fungal infections (Sinrang *et al.,* 2022). The most significant dental problems in Indonesia are cavities/ pain at 45,3% (Devi *et al.,* 2013).

Meanwhile, the oral health problems that most Indonesians experience are swollen gums and ulcers, which is 14%. Oral cavity diseases are often found in society among men and women, with the highest number being women aged 20-29 years at 36.28% (Prihanti *et al.,* 2022). People with the potential to experience canker sores consume a lot of fast food, at a percentage of 22.63% (Aerosta *et al.,* 2020). Recurrent canker sores can also produce widespread plaque. This is because canker sore sufferers have habits such as biting and chewing, and most sufferers also experience uncontrolled stress (Artika, 2023).

Abrus precatorius is a plant that can be used and has parts that contain many medicinal properties, especially the leaves. This is because flavonoids and steroids are the most abundant content in Saga leaves and can treat canker sores, coughs, toothaches, inflammation, stomach aches, and cancer (Tri Rumanti & Saragih, 2023). According to Kadeni & Santoso, (2022) Saga leaves are helpful as a medicine for the throat. Therefore, saga leaves can be processed into candy. Saga leaves can also be processed as a drink with betel leaves and galangal added, and then the boiled water is consumed to treat canker sores and coughs. Adding Abrus precatorius leaves with leaves and boiled Ginger rhizomes can be drunk in the morning and evening to treat liver disease (Syarif *et al.,* 2011). One of the uses of Saga vine leaves is that they are used as tea bags for mouth ulcer sufferers. This tea bag is made because the product is practical in its presentation, and the selling price is cheaper than existing alternatives.

Based on research conducted by Widyawati *et al.,* (2023) regarding Beluntas tea steeping water during storage, it was detected that it contained phytochemical compounds, including alkaloids, phenolics, flavonoids, saponins, tannins, and cardiac glycosides. Toxicity tests using the BSLT (Brine Shrimp Lethality Test) method carried out by Juniarti *et al.,* (2010)showed that of the three Saga leaf extracts tested, namely methanol extract, ethyl acetate fraction, and n-hexane, only one extract had toxic properties are in the methanol extract. The making of Saga leaf tea bags for mouthwash was carried out in research by Puspita *et al.,* (2019), and the results obtained were that preparations stored at room temperature and cool did not experience significant changes in taste, color, smell, and shape. The most effective saga leaf extract for inhibiting the growth of *Escherichia coli* bacteria is a concentration of 100% with an inhibitory zone diameter of 12.6 mm (Hodmatua & Saiful, 2023). Saga leaf extract can also inhibit the antibacterial activity of Staphylococcus aureus at a concentration of 40% (Yousefa *et al.,* 2022). Based on this description, research needs to be carried out regarding using Abrus precatorius leaves in supporting traditional medicine. This research aims to determine the best tea bag formulation regarding steeping color and sediment. The benefit of this research is that the tea bag formulation can be used as a support for traditional medicine.

RESEARCH METHODS

This experimental research method describes the characteristics of Abrus precatorius leaf tea bags. The experimental method is a quantitative research method used to determine the effect of treatment and outcome variables under controlled conditions (Arifin & Subarna, 2023). This research design used a completely randomized design with two factors. The research factors used were particle size and brewing time. A completely randomized design is a design that aims to compare the means of different treatments (Sari & Khafid, 2022). The formulation of Saga rambat leaf tea can be seen in **Table 1.** This research started

with making tea bags by drying the Abrus precatorius leaves for 2 hours at a temperature of 55°C. Grinding saga leaves, sieving, packaging, and brewing tea bags. The analysis carried out in this research was based on the color and sediment in steeping Abrus precatorius leaf tea bags.

Table 1. Abrus Leaf Tea Formulation

Brewing Time	Tea Particle Size		
	40 mesh (B1)	60 mesh (B2)	80 mesh (B3)
5 minutes (A1)	A1B1	A1B2	A1B3
10 minutes (A2)	A2B1	A2B2	A2B3

RESULT

Making Abrus precatorius leaf tea bags refers to research by Puspita *et al.,* (2019), which begins with sorting the Abrus precatorius leaves from the twigs and then washing them. The clean saga leaves are then spread out at room temperature for 1.5 hours to wilt. The creeping saga leaves are dried at 55°C for 2 hours in the oven. After the saga leaves are dry, they are ground with a grinder machine to produce powder from the creeping Abrus precatorius leaves. The powder is then sieved with a size of 40 -80 mesh. Then, put 2 grams of tea powder into a bag (Maruapey *et al.,* 2023). The Abrus precatorius leaf tea bag is brewed at a temperature of ± 80°C with a steeping time of 5 minutes and 10 minutes (Fillianty *et al.,* 2023).

Abrus precatorius leaf tea is obtained from 6 treatments of different particle sizes and brewing times, producing different color characteristics and sediments. The characteristics of this tea can be analyzed descriptively. The following are the results of tea bags with different treatments.

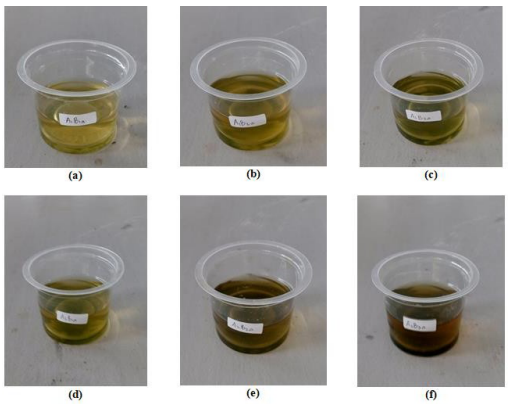

Figure 1. Tea Bag (a) A1B1, (b) A1B2, (c) A1B3,

(d) A2B1, (e) A2B2, (f) A2B3

Color observation is an important parameter in the sensory assessment of product appearance. This is because color is the first sensory assessment that consumers see directly (Lagawa *et.al.,* 2020). The color of the Abrus precatorius leaf tea bags ranges from yellowish white to greenish black. Tea bags with a brewing time of 5 minutes produce a lighter color than those with a brewing time of 10 minutes. The color of the teabag can be influenced by the length of brewing

time and the size of the particles contained in the teabag. According to Putra *et al.,* (2020), the longer it takes to brew tea, the more bioactive compounds will be extracted. The darker color of the brew can be caused by the brew's brewing time, which causes the compounds in the brew to be extracted completely (Priscilla *et al.,* 2023).

The percentage of sediment contained in Abrus precatorius leaf tea can be seen in the following table.

Table 1. Percentage of Saga Leaf Tea Sediment

Sample	Sediment Percentage (%)
A1B1	0,27
A1B2	0,88
A1B3	2,05
A2B1	0,92
A2B2	1,85
A2B3	2,81

Tea sedimentation is a process to determine the number of particles dissolved in water by dissolving simplicia with a water solvent (Akbar *et al.,* 2023). The particle size can influence the number of particles dissolved in water in the tea. The smaller the tea particle size, the easier it will be for the solvent to enter the tissue of the material so that the active compound withdrawal process is more effective (Indriyani *et al.,* 2021). The lowest percentage of saga leaf tea sediment produced was 0.27% when treated with a particle size of 40 mesh and a brewing time of 5 minutes. The highest percentage of tea sediment was found in the treatment, with a particle size of 80 mesh and a brewing time of 10 minutes, which was 2.81%. Based on this, the larger the particle size and the faster the brewing time, the smaller the percentage of tea sediment will be.

DISCUSSION

The characteristics of Abrus precatorius leaf tea, namely the color and sediment produced, can be seen from the factors that influence it, namely the length of brewing time and the particle size of the tea. The color produced can be influenced by the length of brewing time. This is because the longer the ingredients are dissolved, the more it can allow the water and tea to bond so that the content of phenolic compounds in the ingredients increases (Putra *et al.,* 2020). Based on these results, such as butterfly pea flower tea products (Kushargina *et al.,* 2022) and soursop leaf tea products (Fillianty *et al.,* 2023). The color produced from this tea is by the SNI for packaged dry tea, which is typical of tea products (SNI 3836: 2013).

The size of the particles influences the percentage of sediment obtained. The particle size of small tea samples has a more outstanding total phenolic content than large particle tea leaf samples (Nugraheni *et al.,* 2022). The content of bioactive compounds in tea has increased because a lot of sediment is produced. In addition, size reduction can cause damage to the leaf cells so that more active

compounds are released (Irbah *et al.,* 2023). This is the case with cosmos tea products (Indriyani *et al.,* 2021), green tea products (Firyanto *et al.,* 2019), and coffee bean tea products (Muzaifa *et al.,* 2020).

CONCLUSION

Abrus precatorius is a plant that can be used and has parts that contain many medicinal properties, especially the leaves. Flavonoids and steroids are the most abundant in abrus precatorius leaves and can treat canker sores, coughs, toothaches, inflammation, stomach aches, and cancer. Based on the research results, a particle size of 40 mesh and a brewing time of 5 minutes produce tea bags with a greenish-white color and less sediment. A particle size of 80 mesh and a brewing time of 10 minutes has the best formulation, producing a deep green color and more sediment. This research needs to be carried out regarding the phenol content test and antibacterial test on abrus precatorius leaf tea bags.

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