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journal homepage:www.midwifery.iocspublisher.org

Ethnopharmacological study on traditional medicinal plants of the anak dalam tribe in Bukit Dua Belas, Jambi Province as a treatment for diarrhea and antibacterial test

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ARTICLE INFO

Article history:

Received May 19, 2025
Revised May 21, 2025
Accepted May 27, 2025

Keywords:

Anak Dalam Tribe
Bacterial Inhibitory Power Test
Ethnopharmacology
Traditional Plants

ABSTRACT

The Anak Dalam Tribe or Orang Rimba is one of the tribes that live on the island of Sumatra, precisely located in Jambi Province. The Anak Dalam Tribe utilizes plants as a necessity in their lives, one of the benefits of plants used by the Anak Dalam Tribe community as a cure for a disease. This study aims to examine the potential of plants as a cure for diarrhea in the Anak Dalam Tribe, Bukit Dua Belas. This type of research is descriptive research with qualitative methods and snowball sampling techniques through open-ended interviews with 5 informants as Temenggung or tribal chiefs, and 1 informant who is a shaman using interview guidelines. Based on the results of the interview, 14 types of single plants and 4 types of plants in the form of potions were obtained which were used as diarrhea medicine. The plant organs that are utilized include roots, leaves, sap, mushrooms, tubers. The processing method is boiled, squeezed, burned, grated. While its use is by eating, drinking and, sticking to the part of the body that is sick. In the treatment process in the Anak Dalam Tribe, Bukit Dua Belas still uses spiritual methods by relying on the help of Dewo or supernatural powers. In the bacterial inhibition test, the average clear zone results were wider than the others in the test with 96% ethanol extract with Escherichia coli bacteria, the widest clear zone was found in the Lelisau plant at 14.1 mm, in Staphylococcus aureus bacteria, the widest clear zone was in the Mempalas plant at 10.7 mm so that it was included in the strong category. Testing the diameter of the inhibition power using water extract tested with Escherichia coli bacteria, the widest clear zone was found in the Lelisau leaves at 12.35 mm, in Staphylococcus aureus bacteria, the widest clear zone was in the Water Apple plant at 10.6 mm so that it was included in the strong category.

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INTRODUCTION

Indonesia is a megadiverse country with very high biodiversity wealth, including plant biodiversity (Irawanto, 2023),(Irawanto, 2023). It is estimated that there are more than 38,000 plant species spread across various islands and regions, many of which are used by communities as sources of traditional medicine (Zuhud et al., 2014),(Hidayat, 2021). Amidst the development of modern medical science, the practice of using medicinal plants remains strong in various indigenous communities. This reflects the community's belief in the effectiveness of natural medicine that has been passed down from generation to generation as well as concerns about the side effects of chemical drugs. The World Health Organization (WHO) notes that 80% of people in developing countries still use traditional medicine as their main therapy, and even in developed countries its use reaches 60% (Heart, 2021),(MILLENNIUM, 2022). This trend marks the revival of nature-based medicine, or what is known as the "Back to Nature" movement (Faithful & Visited, 2021),(Khamdan, 2022).

In this context, ethnopharmacology becomes an important field that combines health science and socio-cultural approaches to study local knowledge of communities regarding the use of plants as medicine (Sidha Bhagawan & Suproborini, 2023),(Girsang, Nasution, Ginting, & Elfira, 2025). Ethnopharmacology not only inventories the types of plants and how to use them, but also evaluates their pharmacological activity and potential for development as broader therapeutic products. Ethnopharmacological studies also support the preservation of traditional knowledge that is threatened with extinction by modernization, as well as opening up opportunities for bioactive exploration of natural materials that have not been scientifically explored (SELVI, 2024),(DWI, 2023).

One of the indigenous communities that still actively practices traditional medicine is the Suku Anak Dalam (SAD), also known as the Orang Rimba. This tribe lives nomadically in the interior forest areas of Jambi Province, including the Bukit Dua Belas National Park area (Febrian, n.d.),(Indradewa & St, 2021). In their daily lives, SAD depend on the surrounding nature for almost all of their needs, including treatment. The traditional treatment they practice is carried out by battra (traditional shamans) using various types of forest plants. Knowledge about the efficacy of these plants is passed down orally from generation to generation without written documentation, so it has the potential to be lost if it is not immediately researched and archived (Hartati, 2020).

Diarrhea is one of the diseases often suffered by the Suku Anak Dalam community. A sedentary lifestyle, limited access to clean water, and the habit of using rivers as a source of drinking water, bathing, and washing increase the risk of exposure to pathogens that cause diarrhea (Alfian, 2023),(Salma, Binekada, Fristiohady, & Alifariki, 2021). In conditions like this, the SAD community does not rely on modern health facilities, but treats illnesses with traditional concoctions made from local plants. Unfortunately, scientific information related to the effectiveness of plants used for diarrhea treatment by the SAD community, especially in the Bukit Dua Belas area, is still very limited (Susanti, Suraida, Natalia, & Ningsih, 2023),(Listautin, Nengsih, & Harahap, 2024).

Previous studies such as Gustina Indriati's research (2023) have inventoried the use of medicinal plants by the Anak Dalam Tribe in Tabun Village, Tebo Regency, Jambi (Perawati et al., 2023),(Ulhaqi, 2023). However, research that specifically examines the use of antidiarrheal plants by SAD in the Bukit Dua Belas area and conducts scientific validation through antibacterial tests on pathogens that cause diarrhea has not been widely conducted. In fact, such studies are very important to empirically prove the effectiveness of these plants and support the integration of traditional knowledge into modern pharmaceutical science (Suatama, 2021),(REGION, ADITAMA, FAUZI, RENALDI, & CULTURE, nd).

Based on this background, this study aims to examine the potential of traditional medicinal plants used by the Suku Anak Dalam Bukit Dua Belas as a treatment for diarrhea (Permata Sari, 2024),(Yatias, 2015). The study includes an inventory of plant species used, plant parts utilized,

processing techniques and drug use, and testing the antibacterial activity of plant extracts against Escherichia coli and Staphylococcus aureus bacteria. The results of this study are expected to be a scientific basis in the development of natural-based drugs as well as a contribution to the preservation of local knowledge of indigenous communities (Ilhami, Diniya, Susilawati, Sugianto, & Ramadhan, 2021),(Anzelina, 2023).

RESEARCH METHOD

This study is a descriptive study with a qualitative approach combined with in vitro experimental tests. Ethnopharmacology studies were conducted through direct exploration in the field using in-depth interview methods, while antibacterial activity testing of the plants used was carried out in the laboratory using the disc diffusion method. Field research was conducted in the Bukit Dua Belas National Park area, Sarolangun Regency, Jambi Province. While laboratory tests were conducted at the Laboratory of the Faculty of Pharmacy, Pancasila University, Jakarta. The entire series of studies took place from January to December 2024.

The informants in this study consisted of five Temenggung (tribal chiefs) and one battra (shaman). The determination of informants was carried out using the snowball sampling technique, namely based on recommendations from the National Park Office and community leaders. Data collection was carried out through semi-structured interviews with open-ended questions using previously prepared interview guidelines. In addition, direct observation and documentation were carried out on medicinal plants and traditional healing practices used by the Anak Dalam Tribe to treat diarrhea. Medicinal plants claimed to be used as antidiarrhea were collected from the research location, then dried and made into simplicia. The extraction process was carried out using two methods, namely maceration using 96% ethanol and infusion using water solvent. The resulting extract was then dried and stored for phytochemical testing and antibacterial activity testing.

Phytochemical screening was conducted to identify the content of secondary metabolite compounds contained in each extract, including alkaloids, flavonoids, saponins, tannins, steroids, triterpenoids, and coumarins. The test was conducted qualitatively using specific reagents for each group of compounds. Antibacterial activity tests were conducted on two types of bacteria that cause diarrhea, namely Escherichia coli and Staphylococcus aureus. The method used was the disc diffusion method (Kirby-Bauer) on Mueller Hinton Agar (MHA) media. Paper discs were impregnated with plant extracts and placed on the surface of the media that had been inoculated with bacteria. After incubation for 24 hours at 37°C, the inhibition zone was observed and measured in millimeters. The test was conducted at least in duplicate, and the results were compared with positive controls (chloramphenicol) and negative controls (sterile distilled water). Interview data were analyzed descriptively qualitatively with data reduction, theme categorization, and verification through source triangulation. The results of the antibacterial test were analyzed quantitatively by calculating the average diameter of the inhibition zone, then categorized based on the level of antibacterial activity.

RESULTS AND DISCUSSIONS

Ethnopharmacological Results of the Anak Dalam Tribe in Bukit Dua Belas

Battra (shamans) of the Anak Dalam Bukit Dua Belas Tribe have traditional healing knowledge that is generally passed down directly from their ancestors. Each battra has their own "history of knowledge" so that medicinal knowledge is obtained from generation to generation. In practice, if the patient does not know the medicinal plants needed, the battra will immediately look for the plant material. Before giving the potion, the battra often reads a spell or prayer to ask for healing from God or Dewo (supernatural powers). Some battra even perform special rituals so that instructions for medicinal plants appear in dreams.

Spiritual practices are very prominent in traditional Anak Dalam medicine. In addition to mantras, there are ritual terms such as bedikir (a special ritual for outsiders) and besale (a ceremony to mix herbs). Battra III stated that if he himself did not know the medicine, he would perform a ritual so that "the medicine would be told in a dream, then the battra would convey it to the patient". In the treatment process, certain food restrictions or prohibitions are often applied, especially during the besale treatment period. For example, patients are prohibited from consuming chicken, goat, snake, monitor lizard, and buffalo (only some small game meat such as deer or civets are allowed). The duration of treatment depends on the patient's recovery; generally the herbs are consumed "until healed", which according to the battra can take about a week.

The results of interviews with the battra showed that there were 14 species of single plants and 4 types of combination herbs used as diarrhea medicine by the Suku Anak Dalam Bukit Dua Belas. The following detailed data were compiled based on the research report:

Table 1. Detailed data based on research reports

Species (Local / Scientific name)	Plant Parts	Processing Method	How to use	Herb
Lelisau leaves (Dendrocnide moroides)	Leaf	Soaked in warm water then kneaded	Drink (3x a day)	Single
Red Guava Leaves (Syzygium aqueum) + betel leaves (Piper betle) or turmeric (Curcuma longa)	Leaf	Soaked (in warm water) then kneaded; or boiled	Drink (3x a day)	Combination
Long Leaf Fern (Stenochlaena palustris)	Leaf	Soaked or boiled	Drink (3x a day)	Single
Katu Leaf (Sauropus androgynus)	Leaf	Soaked or boiled (avoid for anemia sufferers)	Drink (3x a day)	Single
Belando Sago Potato (Maranta arundinacea)	tuber	Shredded	Stick on stomach	Single
Guava leaves (Syzygium malaccense) + basil leaves (Ocimum basilicum) + turmeric leaves (Curcuma longa)	Leaf	Boiled (makes ~5 cups of decoction)	Drink (several times)	Combination
Keleketai Root (a type of climbing liana)	Root	Cut (water in the roots drips)	Drink root juice	Single
Turmeric Root (Arcangelisia flava)	Root	Boiled or grated	Drink or apply to the stomach	Single
Plating Deer (Tetracera scandens)	Root	Boiled	Drink (boiled water)	Single
Kepur Root (scientific name not recorded)	Root	Boiled	Drink (boiled water)	Single
Pelekupemungsong root (Leuconotis eugenifolia)	Root	Cut (water in the roots drips)	Drink root juice	Single
Sungkai leaves (Peronema canescens) + Duku leaves (Lansium domesticum) + Kengkuyangan leaves (Rhaphidophora sylvestris)	Leaf	Kneaded with warm water	Drink (squeezed water)	Combination
Phellinus Mushroom (Charming Heart) (Phellinus badius)	Fungus (on Meranti wood)	Burnt to black	Rub on the stomach (with kerosene)	Single
Selempot Payo (local name; species not recorded)	–	Boiled	Drink (3x a day)	Single
Lettuce leaves (Pycnarrhena cauliflora)	Leaf (shoot)	Eaten fresh or boiled	Eaten or drunk (3x a day)	Single
Salak Wood Sap (Salacca spp. sap)	Sap (wood grain)	Boiled	Drink (boiled water)	Single
Pelekupemungsong root + keleketai root + sempalas root (Leuconotis eugenifolia, Tetracera scandens)	Mixed roots	The roots are chopped/crushed then stirred	Drink (mixture of juice)	Combination
Sentubung (Gonocaryum gracile)	–	Boiled	Drink (1–2x daily)	

From the table above, it can be seen that the common processing method is boiling or soaking the herbs (including by squeezing/squeezing). Most herbs are drunk as medicinal drinks; some (such as sago belando or Phellinus badius) are processed to be applied or rubbed on the patient's body. For example, Phellinus badius (tenawan hati) mushrooms are "burned until black" and then rubbed on the stomach with kerosene. Overall, these results indicate that the Anak Dalam Tribe utilizes a combination of natural ingredients and healing ceremonies in a structured traditional way.

Making Plant Extracts

Extraction was carried out on the leaf simplicia of traditional medicinal plants of the Anak Dalam Tribe (such as Sentubung, Kengkuyangan, Lelisau, Mempalas, Water Apple, Sungkai, Duku, Sirih, Bol Guava, Kemangi, Turmeric, Paku Panjang, Katu, Selado, and combination herbal formulations) collected from Bukit Dua Belas National Park (Jambi). The solvents used were 96% ethanol for the maceration method and water (aquadest) for the infusion method. The main tools include a homogenizer for stirring the extraction, a rotary evaporator to evaporate the ethanol filtrate, and a freeze dryer (lyophilizer) to dry the water extract. In addition, standard laboratory equipment was also used such as a water bath (hot plate), beaker glass, separator funnel with filter paper, and glass measuring instruments (eg measuring cylinders and scales).

In the maceration method, the sample of the drug (dry leaf powder) was extracted with 96% ethanol. The mixture ratio used was 1:20 (10 g of drug: 200 mL of ethanol). The extraction solution was stirred with a homogenizer for 2 hours at room temperature, then filtered to separate the filtrate and residue. This maceration process was repeated twice (total stirring 2×2 hours) to maximize the dissolution of the active compound. The ethanol filtrate from each repetition was then combined and evaporated using a rotary evaporator until a thick extract (slurry) was obtained. The thick extract was then weighed to determine the yield.

The infusion method was carried out for water-based extracts according to traditional practices. 10 g of dried leaf simplicia was soaked in 200 mL of water (ratio 1:20) and heated on a water bath at a temperature of around 90 °C for 15 minutesfile-7 hourshtnbmlqbwjiyfulgu5. After heating, the solution was filtered to separate the filtrate. The water filtrate obtained was then put into a freeze-proof container and cooled in the refrigerator until frozen. Furthermore, the frozen water extract was put into a freeze dryer until dry extract powder was formed. The freeze drying process maintains the quality of the extract by removing water without direct heating.

In the maceration ethanol extract, drying is done by evaporation using a rotary evaporator at a temperature above ethanol (around 40–60 °C) until it thickens. Meanwhile, the infusion extract (water) is dried using the freeze drying method: the extract solution is frozen first, then the water is evaporated by sublimation under vacuum conditions. The combination of these drying methods (evaporation and lyophilization) produces two forms of extract - a thick extract (soft solid) from ethanol and a dry powder from water - which is then stored in a closed container and refrigerated until further testing.

The extract yield is calculated as the percentage of the weight of the dry extract to the initial weight of the simplex. The yield table shows the differences in the amount of extract obtained in each sample. In general, ethanol extracts provide higher yields than water extracts. The yield of ethanol extracts varies between 5%–14%, with the highest value being 14% (Guava leaves Bol) and the lowest being around 5% (Lelisau leaves and Katu leaves). The yield of water extracts ranges from 0.7%–9.5%, with the highest value being ~9% (Sirih leaves) and the lowest being around 0.7% (Mempalas leaves) file-7jamhtnbmlqbwjiyfulgu5. Quantitatively, the overall yield values are listed in Table 6 of the thesis (e.g. Guava leaves Bol: 14% ethanol, 3% water; Sirih leaves: 7.5% ethanol, 9% water, etc.).

For combination herbal samples (containing two or three types of herbs), each herbal medicine was prepared separately at a ratio of 1:20 (10 g per 200 mL) using both extraction methods (maceration and infusion). Thus, if a traditional formula contains 2–3 herbs, the extract of

each herb was prepared separately first. After the extraction process was completed, the ethanol extracts from each herb were then combined into one collection of ethanol extracts, and the water extracts from each herb were combined into a mixed water extract. This step ensures that the composition ratio of each herb is maintained and the combined extract can be evaluated as a single formula in further tests.

Phytochemical Screening

Phytochemical screening aims to detect the presence of secondary metabolite compounds (alkaloids, flavonoids, tannins, saponins, triterpenoids, steroids, coumarins, etc.) in plant extracts. This test is qualitative and uses specific reagents that produce color changes or precipitates when the target compound is present. For example, alkaloids are tested with Dragendorff, Mayer, Hager, or Wagner reagents (orange-red or brown precipitates appear when positive). Flavonoids are tested for example with Shinoda (magenta sound mg) or drops of lead acetate solution (yellow precipitate). Tannins and phenols are tested with $FeCl_3$or acetic acid/m-lamin (dark green/blue color). Saponins are tested with the foam test (stable foamy liquid like honeycomb). Steroids and triterpenoids are tested for example with Liebermann's reagent–Burchard or Salkowski (green/violet ring appears). Coumarin is tested with NaOH (solution turns yellow if coumarin is present). (a) Alkaloids: Dragendorff's test (orange precipitate) and Mayer's test (white precipitate). (b) Flavonoids: Shinoda's test (magenta red color) and lead(II) acetate test (yellow precipitate). (c) Tannins/Phenols: FeCl test$_3$ (green/dark color) or gelatin (white sediment). (d) Saponin: foam test (stable honeycomb-shaped foam). (e) Steroid/Triterpenoid: Liebermann–Burchard test (green/violet ring) or Salkowski (red color). (f) Coumarin: NaOH test (solution turns yellow).

Each extract was tested using either 96% ethanol (concentrated extract) or water extract (freeze-dried infusion) to compare the solubility of secondary compounds.

The following table presents the results of qualitative tests on 17 medicinal plants of Suku Anak Dalam (96% ethanol extract and water) in phytochemical screening. The + sign indicates the compound is detected, while - indicates not detected (no characteristic color/precipitation is formed). Data adapted from Yolandari's thesis (2025).

Table 2. Data adapted from yolandari's thesis

No	Plant Name	Extract	Alkaloid	Flavonoid	Tannin	Saponins	Triterpenoid	Steroid	Coumarin
1	Sentubung leaves	Ethanol	+	+	+	+	–	+	–
2	Kengkuyangan Leaves	Ethanol	+	+	+	–	+	–	–
3	Liquorice Leaf	Ethanol	+	+	+	–	–	+	+
4	Leaf of Mempalas	Ethanol	+	+	+	+	+	–	–
5	Water Apple Leaves	Ethanol	+	+	+	+	–	+	–
6	Sungkai Leaves	Ethanol	+	+	+	+	–	+	–
7	Duku Leaves	Ethanol	+	+	+	+	–	+	–
8	Betel leaf	Ethanol	+	+	+	+	–	+	–
9	Guava Leaf Boll	Ethanol	+	+	+	+	–	+	–
10	Basil leave	Ethanol	–	+	+	–	+	–	+
11	Turmeric Leaves	Ethanol	+	+	+	+	+	–	–
12	Long Fern Leaf	Ethanol	+	+	+	+	+	–	–
13	Katu Leaf	Ethanol	+	+	+	+	–	–	+
14	Celado Leaf	Ethanol	+	+	+	+	–	–	–
15	Water Apple Leaves + Betel Leaf (mixture)	Ethanol	+	+	+	+	–	+	–
16	Sungkai leaves	Ethanol	+	+	+	+	+	–	+

No	Plant Name	Extract	Alkaloid	Flavonoid	Tannin	Saponins	Triterpenoid	Steroid	Coumarin
	+ Langsat + Galangal (mix)								
17	Guava Leaf Boll + Turmeric + Basil (mix)	Ethanol	+	+	+	+	+	–	+
1	Sentubung leaves	Water	+	+	+	+	–	+	–
2	Kengkuyangan Leaves	Water	+	+	+	–	+	–	–
3	Liquorice Leaf	Water	+	+	+	–	–	+	+
4	Leaf of Mempalas	Water	+	+	–	+	+	–	–
5	Water Apple Leaves	Water	+	+	+	+	+	–	–
6	Sungkai Leaves	Water	+	+	+	+	+	–	–
7	Duku Leaves	Water	+	+	+	–	–	+	–
8	Betel leaf	Water	–	+	+	–	–	+	–
9	Guava Leaf Boll	Water	+	+	+	–	–	+	–
10	Basil leave	Water	–	+	+	–	+	–	–
11	Turmeric Leaves	Water	+	+	+	+	+	–	–
12	Long Fern Leaf	Water	+	+	+	+	+	–	–
13	Katu Leaf	Water	+	+	+	+	–	+	–
14	Celado Leaf	Water	+	+	+	+	–	–	–
15	Water Apple Leaves + Betel Leaf (mixture)	Water	+	+	+	+	–	+	–
16	Sungkai leaves + Langsat + Galangal (mix)	Water	+	+	+	+	+	–	+
17	Guava Leaf Boll + Turmeric + Basil (mix)	Water	+	+	+	+	+	–	+

In general, flavonoids and tannins were detected in almost all extracts, both ethanol and water (almost all rows show "+"). This indicates that both phenolic groups are dominant in the tested antidiarrheal plants. Alkaloids are also very common: almost all ethanol and water extracts showed positive reactions except for a few cases (e.g., ethanol extract of Kemangi was negative for alkaloids, water extracts of Sirih and Kemangi were negative). Saponins were found in most ethanol extracts (14 out of 17 plants), but less in water extracts (around 11 plants), indicating that ethanol extracts more saponins than water. In contrast, steroids were found in about half of the plants (e.g., ethanol of Sentubung, Kengkuyangan, Sirih were positive for steroids) and relatively few triterpenoids were detected (only in a few extracts, e.g., ethanol of Mempalas, Kemangi, Kunyit were positive for triterpenoids). Coumarins were rarely detected, only in a few mixed extracts and Lelisau/Kemangi leaves (several combinations of plants showed positive coumarin reactions). Differences in ethanol vs. water: ethanol extract tends to extract alkaloids and saponins better (excess number of positive responses), while water extract shows a similar pattern for flavonoids/tannins but fewer alkaloids and saponins. This pattern indicates that most phenolic compounds (flavonoids/tannins) are polar and therefore dissolve well in both solvents, while lipophilic compounds (triterpenoids, steroids) are relatively limited in their extraction.

This phytochemical screening showed that the traditional antidiarrheal plants of SAD Bukit Dua Belas are rich in flavonoids and tannins, with alkaloids and saponins also frequently

present, especially in the ethanol extract. Ethanol extracts are generally more comprehensive in extracting secondary compounds than water extracts in this study.

Bacterial Inhibitory Power Diameter Test

Testing was conducted on two types of bacteria that cause diarrhea, namely Escherichia coli (Gram negative) and Staphylococcus aureus (Gram positive), using the disk diffusion method (Kirby-Bauer). Plant extracts were tested in two types of solvents: 96% ethanol and water (infusa). The test was carried out in 2 repetitions (duplo) and the clear zone formed was measured in millimeters (mm) after 24 hours of incubation at 37°C

The following is a complete table of the results of the diameter test of the inhibition power of traditional medicinal plant extracts of the Anak Dalam Tribe against Escherichia coli and Staphylococcus aureus bacteria, based on two types of solvents: 96% ethanol and water. Values are presented in millimeters (mm), indicating the average inhibition zone formed after 24 hours of incubation.

Table 3. Data adapted from yolandari's thesis

No	Plant Name (Extract)	*E. coli*(Ethanol)	*S. aureus*(Ethanol)	*E. coli*(Water)	*S. aureus*(Water)
1	Sentubung leaves	8.0	7.2	6.5	6.8
2	Kengkuyangan Leaves	6.9	6.7	7.1	6.2
3	Liquorice Leaf	14.1	8.0	12.35	10.2
4	Leaf of Mempalas	9.0	10.7	7.9	8.6
5	Water Apple Leaves	11.1	7.4	9.4	10.6
6	Sungkai Leaves	6.4	6.3	6.8	6.5
7	Duku Leaves	6.0	6.0	6.0	6.0
8	Betel leaf	9.6	7.75	8.5	8.3
9	Guava Leaf Boll	9.7	7.85	8.45	8.5
10	Basil leave	8.0	7.6	7.9	7.5
11	Turmeric Leaves	8.5	7.2	7.0	6.9
12	Long Fern Leaf	9.5	7.85	9.6	8.9
13	Katu Leaf	10.8	7.3	9.0	8.1
14	Celado Leaf	7.4	6.4	7.2	7.0
15	Water Apple + Betel (Mixture)	8.6	8.1	9.75	9.3
16	Sungkai + Duku + Kengkuyangan (Mixture)	7.1	7.4	7.8	7.9
17	Guava + Turmeric + Basil (Mixed)	9.2	8.4	8.9	8.6

Discussion

In a study conducted by Siti Aisyiyah entitled "Antibacterial Activity of Sungkai Leaf Infusion (Peronema canesces Jack) Against Escherichia coli Bacteria" 96% ethanol extract of Sungkai leaves with a concentration of 100% had an inhibitory power of 14.46 mm which was tested on Escherichia coli bacteria. In a study conducted by D. Fransisca (2020) entitled "Test of the antibacterial activity of ethanol extract of sungkai leaves (Peronema canescens Jack) against the growth of Escherichia coli using the Kirby-Bauer disc diffusion method" ethanol extract of sungkai leaves with a concentration of 100% had an inhibitory power of 7.75 mm. Meanwhile, in a study conducted by Sihaloho (2023) entitled "Antibacterial Activity of Sungkai Leaf Extract (Peronema canescens Jack.) Against Klebsiella pneumonia and Staphylococcus aureus" the ethanol extract of Sungkai leaves tested at a concentration of 100mg/ml had an inhibitory power of 14.86 mm. In this study, researchers tested using Escherichia coli bacteria, the ethanol extract had an inhibitory power of 6.05 mm, while the water extract was 8.0 mm. Staphylococcus aureus bacteria, the ethanol extract had an inhibitory power of 7.5 mm, and the water extract 7.55 mm.

According to research conducted by Albrita Pehino (2021) entitled "Antibacterial Activity Test of Duku Lansium Domesticum Seed Extract Against Staphylococcus Aureus and Escherichia Coli Bacteria" antibacterial activity with Duku seeds provides information regarding the results of measuring the inhibition of Staphylococcus aureus bacteria reaching 11.3 mm at a concentration of

40%, while in Escherichia coli bacteria the inhibition of bacteria reached 12.6 mm at a concentration of 40%, a concentration of 40% is the highest concentration. In this study, researchers tested the antibacterial activity of duku leaf extract where in the ethanol extract of Escherichia coli bacteria showed an inhibition of 8.15 mm while in the water extract it was 6.15 mm, then researchers compared it with Staphylococcus aureus bacteria, the ethanol extract showed an inhibition of 6.6 mm, while in the water extract the inhibition results were 6.5 mm.

In a study conducted by Sulastrianah entitled "Test of the Inhibitory Power of Soursop Leaf Extract (Annona Muricata L.) and Betel Leaf (Piper Betle L.) on the Growth of Escherichia Coli Bacteria" methanol extract of Betel leaves with a concentration of 1.250 tested on Escherichia coli bacteria had an inhibition of 0 mm. Meanwhile, according to a study conducted by Nur Laela Alydrus (2022) entitled "Antibacterial Effectiveness of Green Betel Leaf Extract (Piper Betle L) Against Staphylococcus Aureus" the largest clear zone at a concentration of 80% was 26.3 mm while at a concentration of 20% it only had an inhibition of 17.6 mm. In this study, researchers tested with Escherichia coli bacteria, the ethanol extract had an inhibition power of 8.5 mm, while the water extract was 6.95 mm. In Staphylococcus aureus bacteria, the ethanol extract had an inhibition power of 7.75 mm, and the water extract was 7.25 mm.

Research conducted by Maria Angelina (2015) entitled "Antibacterial Activity Test of Ethanol Extract of Basil Leaves (Ocimum sanctum L.) Against the Growth of Escherichia coli and Staphylococcus aureus Bacteria" ethanol extract of basil leaves with an ethanol extract concentration of 100% has a very strong inhibitory power of 9.54 mm which was tested on Escherichia coli bacteria. While in Staphylococcus aureus bacteria at an ethanol extract concentration of 100% has an inhibitory power of 17.89 mm. At the smallest concentration of 20%, basil extract tested on Escherichia coli bacteria has an inhibition of 6.90 mm, and on Staphylococcus aureus bacteria it is 12.10. In this study, basil leaf extract made with 96% ethanol and water has a different inhibitory power area. In Escherichia coli bacteria, ethanol extract has an inhibitory power of 7.25 mm, while water extract has 6.4 mm. In Staphylococcus aureus bacteria, ethanol extract had an inhibitory power of 6.3 mm, and water extract 6.0 mm.

In a study conducted by Santi Nur Bashiroh (2024) "Test of the Inhibitory Power of Turmeric Leaf Extract (Curcuma Longa Linn) Against Escherichia Coli and Staphylococcus Aureus" the ethanol extract of turmeric leaves that had been tested with Escherichia coli bacteria had an inhibitory power of 21 mm at a concentration of 100% and the inhibitory power of turmeric leaf extract against Staphylococcus aureus bacteria at a concentration of 100% was able to form a clear zone of 12.5 mm. In this study, turmeric leaf extract made with 96% ethanol and water had different inhibitory areas. In Escherichia coli bacteria, the ethanol extract had an inhibitory power of 6.8 mm, while the water extract was 6.95 mm. In Staphylococcus aureus bacteria, the ethanol extract had an inhibitory power of 6.15 mm, and the water extract was 6.9 mm.

According to research conducted by Occa Roanisca (2018) "Phytochemical Screening and Antibacterial Potential of Ethanol Extract of Iding-Iding Shoots (Stenochlaena Palustris) Against Bacillus Subtilis, Staphylococcus Aureus, and Escherichia Coli Bacteria" ethanol extract of Inding-inding leaf shoots or in the Suku Anak language in the leaves of the Long Paw which has been tested with Eschericia coli bacteria has an inhibitory power of 5.28 mm at a concentration of 50 mg / ml and the inhibitory power of ethanol extract of iding-iding shoots against Staphylococcus aureus bacteria is still relatively weak. At a concentration of 50 mg / mL, it was only able to form a clear zone of 4.38 mm. In this study, Selado leaf extract made with 96% ethanol and water had different inhibitory areas. For Eschericia coli bacteria, the ethanol extract had an inhibitory power of 8.1 mm, while the water extract was 9.6 mm. In Staphylococcus aureus bacteria, ethanol extract had an inhibitory power of 7.85 mm, and water extract 7.55 mm.

The study entitled "Antibacterial Activity Test of Ethanol Extract of Katuk Leaves (Sauropus Androgynus (L.) Merr) Against Staphylococcus Aureus and Eschericia Coli Bacteria Using Agar Diffusion Method" conducted by Putri Ramadheni (2018) 96% ethanol extract of Katuk

leaves tested with a concentration of 80% has a very strong inhibitory power of 30mm which was tested on Eschericia coli bacteria. While in Staphylococcus aureus bacteria at a concentration of 80% ethanol extract has an inhibitory power of 28.66 mm. At the smallest concentration, namely 50%, the katuk extract tested on Eschericia coli bacteria has an inhibition of 10 mm, and on Staphylococcus aureus bacteria it is 10.33. In this study, Katuk leaf extract made with 96% ethanol and water has a different inhibitory area. In Eschericia coli bacteria, the ethanol extract has an inhibitory power of 10.8 mm, while the water extract is 8.1 mm. In Staphylococcus aureus bacteria, ethanol extract had an inhibitory power of 6.1 mm, and water extract 6.7 mm.

In a study conducted by Inggit Novitasari (2022) "Antibacterial Activity of Methanol Extract of Sengkubak Leaves (Pycnarrhena cauliflora) against Eschericia coli and Staphylococcus aureus Bacteria" Methanol extract of Sengkubak leaves or in the language of the Suku Anak Dalam Tribe in Selado leaves which was tested with Eschericia coli bacteria at an extract concentration of 0.5 g / ml was the most effective concentration, namely 13.90 mm and Staphylococcus aureus at an extract concentration of 0.3 g / ml with an inhibition zone diameter of 12.66 mm. In this study, Selado leaf extract was made using 96% ethanol and water, each of which had a different inhibitory area. In Eschericia coli bacteria, the ethanol extract had an inhibitory power of 8.55 mm, while the water extract was 6.15 mm. In Staphylococcus aureus bacteria, the ethanol extract had an inhibitory power of 6.25 mm, and the water extract was 6.15 mm.

Battra Suku Anak in providing three concoctions in this study consisting of water guava leaf concoction and betel leaf concoction, then Sungkai leaf concoction plus Duku leaf and Kengkuyangan leaf, as well as Guava leaf concoction, Turmeric leaf and Kemangi leaf, in this case the researcher did not find any literature on antibacterial research on the three concoctions. Then on Sentubung leaf, Kengkuyangan leaf, Lelisau leaf, and Mempalas leaf the researcher also did not find any literature on these plants because there were plants whose Latin names the researcher did not know, and there were plants that had not been tested for antibacterial activity.

CONCLUSION

This study found that there are six battra (shamans) in Air Hitam District, Sarolangun Regency, all of whom are men over 40 years old, with four of them being important figures (Temenggung) in the Suku Anak Dalam. Three battra live in the Bukit Dua Belas conservation area, while the other three are in the village. Most of the battra obtain their healing knowledge from their ancestors, one through dreams, and another through spiritual assistance from spirits such as Dewo and Datuk. The battra treat various diseases, including diarrhea, using single or mixed herbal concoctions, which must be prepared and prayed for by the battra themselves. The plants used come from various botanical families such as Urticaceae, Myrtaceae, Piperaceae, to Hymenochaetaceae and Cardiopteridaceae. The parts of the plant that are generally used are leaves (for example, Lelisau leaves, Water Apple, Betel, Long Paku, Katu, and others), roots (such as Keleketai and Sempalas roots), tubers and rhizomes (such as Sago Belando and Kunyit), and mushrooms (Tenawan Hati) and sap (Salak Wood). The concoction is made in various ways such as soaked and kneaded, boiled, grated, burned, or consumed directly, then given to patients by drinking, eating, or sticking to the stomach. From the results of the antibacterial test, the ethanol extract of Lelisau leaves showed the highest inhibitory power against Escherichia coli (14.1 mm), while Mempalas leaves were effective against Staphylococcus aureus (10.7 mm), both of which were classified as strong. Meanwhile, the water extract of Lelisau leaves also showed the largest inhibition zone against E. coli (12.35 mm), and Water Apple leaves against S. aureus (10.6 mm), indicating the high antimicrobial potential of the traditional concoction of the Anak Dalam Tribe.

References

Alfian, AR (2023). Water Crisis in Indonesia: Phenomenon, Impact & Solution. Suluah Kato Khatulistiwa.

Anzelina, DE (2023). The potential of local wisdom of South Sumatra as a basis for contextual learning media for high school biology. Journal of Nusantara Education, 2(2), 53–63.

REGIONAL, TPRSU, ADITAMA, A., FAUZI, SNUR, RENALDI, I., & CULTURE, KPDAN (nd). REALIZING LOCAL WISDOM-BASED HEALTH SERVICE POLICY THROUGH TREATMENT INTEGRATION.

DWI, RY (2023). EXPLORATION OF TRADITIONAL MEDICINAL PLANTS OF THE JAVANESE TRIBE IN BATUMARTA VI VILLAGE, EAST OGAN KOMERING ULU REGENCY. UIN RADEN INTAN LAMPUNG.

Febrian, MD (nd). The Role of the United Nations Declarations On The Rights Of Indigenous People (UNDRIP) In Fulfilling Human Rights of the Anak Dalam Tribe Community in Jambi.

Girsang, BM, Nasution, LR, Ginting, KH, & Elfira, E. (2025). ETHNOPHARMACOLOGY: TRADITIONAL INDONESIAN HERBAL MEDICINE FOR WOUND CARE. Azzia Karya Bersama.

Hartati, TS (2020). National Library in Creating Civilization with "Heutagogy." Library as a Symbol of Civilization and Center of National Culture, 55.

Hati, ST (2021). Changes in Traditional Medicine in the Karo Community of Guru Singa Village.

Hidayat, S. (2021). Utilization of medicinal plants by several ethnic groups in Indonesia. Journal of Tropical Ethnobiology, 177–185.

Ilhami, A., Diniya, D., Susilawati, S., Sugianto, R., & Ramadhan, CF (2021). Analysis of local wisdom of shellfish manongkah in Indragiri Hilir Regency, Riau as a source of science learning based on ethnoscience. Socio-Culture, 18(1), 20–27.

Indradewa, ID, & St, DA (2021). Indonesian Ethnoagronomy. Andi Publisher.

Irawanto, R. (2023). Management of botanical gardens in Indonesian plant conservation. Semsina Proceedings, 4(01), 322–329.

Khamdan, M. (2022). Identity Politics and the Struggle for Hegemony of Power: Contestation in Electoral Politics in Indonesia. A-Empat Publisher.

Listautin, L., Nengsih, N., & Harahap, H. (2024). UTILIZATION OF FOREST WEALTH AS A HEALING THERAPY FOR HEALTH PROBLEMS IN THE INNER CHILD TRIBE (SAD). Tambusai Health Journal, 5(2), 3544–3552.

MILENIA, R. (2022). ETHNOMEDICAL STUDY OF TRADITIONAL MEDICINAL PLANTS OF THE LAMPUNG PEPADUN COMMUNITY IN TIYUH KARTA, WEST TULANG BAWANG REGENCY. UIN RADEN INTAN LAMPUNG.

Nurse, S., Sutrisno, D., Ofiana, A., Hamidatul'Aliyah, S., Andriani, L., Putra, RY, … Hartesi, B. (2023). ETHNOPHARMACY STUDY OF THE ANAK Dalam Tribe (SAD) IN PEMAYONGAN VILLAGE, SUMAY DISTRICT, TEBO REGENCY, JAMBI PROVINCE: ETHNOPHARMACY STUDY OF THE ANAK Dalam Tribe (SAD) IN PEMAYONGAN VILLAGE, SUMAY DISTRICT, TEBO REGENCY, JAMBI PROVINCE. Intellectual Treasures Journal, 7(2), 1698–1716.

Permata Sari, A. (2024). Ethnobotanical Study of the Utilization of Types of Traditional Medicinal Plants by the Anak Dalam Tribe in Selapik Hamlet as Enrichment Material for Plant Taxonomy. University of Jambi.

Salma, WO, Binekada, IMC, Fristiohady, A., & Alifariki, LO (2021). Reference Book of Coastal Community Portraits: Nutrition & Health Innovation Concepts. Deepublish.

SELVI, K. (2024). EDUPHARMACOLOGY OF TRADITIONAL MEDICINAL PLANTS OF THE JAVANESE TRIBE IN CIPADANG VILLAGE, GEDONG TATAAN DISTRICT. UIN RADEN INTAN LAMPUNG.

Setia, P., & Dilawati, R. (2021). New Islamic Trends through the Hijrah Movement: Case Study of the Hijrah Youth Shift. Treasures of Theology, 3(3), 131–146.

Sidha Bhagawan, W., & Suproborini, A. (2023). ETHNOPHARMACOLOGY. UNIPMA PRESS.

Suatama, IB (2021). Modern Balinese Usada. AG Publishing, Yogyakarta.

Susanti, T., Suraida, S., Natalia, D., & Ningsih, T. (2023). Local knowledge of the Anak Dalam tribe about the utilization of medicinal plants in the Bukit Dua Belas Sarolangun National Park Area. Biospecies, 16(2), 19–26.

Ulhaqi, AK (2023). Utilization of Plants as Internal Medicine by the Anak Dalam Tribe (SAD) in Mentawak Village, Merangin Regency as a Learning Medium in the Form of Herbarium in the Plant Taxonomy Course. University of Jambi.

Yatias, EA (2015). Ethnobotany of Medicinal Plants in Neglasari Village, Nyalindung District, Sukabumi Regency, West Java Province.

Zuhud, EAM, Herdiyeni, Y., Hikmat, A., Mustari, AH, Metananda, AA, Pravista, DS, … Setiawan, R. (2014). IPB biodiversity informatics (IPBiotics) for sustainable development. Conservation Media, 19(1), 231277.