

**SFRN** 2019

# PROCEEDING

Security in  
food,  
renewable  
resources,  
and  
natural  
medicines



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**3rd INTERNATIONAL CONFER-  
ENCE ON SECURITY IN FOOD,  
RENEWABLE RESOURCES, AND  
NATURAL MEDICINES 2019  
(SFRN 2019)**

Convention Hall Politeknik Pertanian Negeri Payakumbuh  
INDONESIA



hosted by,  
Politeknik Pertanian  
Negeri Payakumbuh



co-Hosted by,  
Universitas Andalas  
(UNAND)

## **QUANTUM-LEAP OF AGRI-FOOD SYSTEM 4.0 AND DELIVERY OF SUSTAINABLE DE- VELOPMENTS GOALS (SDGS)**

September 25-26, 2019



**PROCEEDING**  
**3rd INTERNATIONAL CONFERENCE ON SECURITY IN**  
**FOOD, RENEWABLE RESOURCES, AND NATURAL**  
**MEDICINES 2019 (SFRN 2019)**

**September 25-26, 2019**  
**Convention Hall Politeknik Pertanian Negeri Payakumbuh**  
**INDONESIA**

*Theme:*  
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**DELIVERY OF SUSTAINABLE DEVELOPMENTS GOALS**  
**(SDGS)"**

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*Theme:*  
**“QUANTUM-LEAP OF AGRI-FOOD SYSTEM 4.0 AND DELIVERY OF**  
**SUSTAINABLE DEVELOPMENTS GOALS (SDGS)”**

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**Welcome Message**  
**Executive Chairman of The 3rd International Conference on Security in Food,  
Renewable resources, and Natural Medicines (SFRN) 2019**



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikum wr.wb

On behalf of the SFRN 2019 organizing committee, I am really honoured and delighted to welcome all of you to the 3rd International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the State Polytechnic of Agriculture Payakumbuh, West Sumatra Indonesia

Our technical program is rich and varied with 8 keynote speeches and 4 invited talks and more than 170 technical papers split between 8 parallel oral sessions and 1 poster sessions. The speakers and participants came from 8 different countries, consist of Academicians, Scientists, Researchers, Practitioners, Professionals, and Government Officials in multidiscipline branch of knowledge, who gathered here today to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and HealthCare Free for All, in particular for those who in needs. As the chairman of conference 2019 SFRN, I know that the success of the conference depends ultimately on the how many people who have worked in planning and organizing both the technical program and supporting social arrangements. This year, the conference is jointly organized by the Payakumbuh State Agricultural Polytechnic and Andalas University. We also thank to the steering committee for their wise and brilliant advice on organizing the technical program; and also to the the Program Committee, both from the Payakumbuh State Agricultural Polytechnic and Andalas University , for their thorough and timely reviewing of the papers and to the Director of Payakumbuh State Agricultural Polytechnic and the rector of Andalas University, and the Head of the Institute for Research and Community Service of Andalas University, and Payakumbuh State Agricultural Polytechnic. Our recognition should go to the Organizing Committee members who have all worked really hard for the details of the important aspects of the conference programs and social activities, and then we extend our gratitude to our students who bore the arduous burden for preparing this event.

We hope this event is also a good step in gaining strengthened cooperation between our universities as we know that the State Agricultural Polytechnic of Payakumbuh is part of the Andalas University previously, of course the psychological relationship between the State Agricultural Polytechnic and the Andalas University is really close.

Finally on behalf of the committee, we apologize profusely for all the shortcomings and everything that is not properly in organizing this event and hopefully AES-Network contributes significantly to the research and technology for the good of humanity.

Thank you

**Fithra Herdian, S.TP, MP**

**Message from Afro-Eurasia Scientific (AES) Network  
3<sup>rd</sup>International Conference on Security in Food, Renewable resources, and  
Natural Medicines (SFRN) 2019**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

On behalf of the AES Network, I am honored and delighted to welcome you to the 3<sup>rd</sup>International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the Agricultural State Poly Technique of Payakumbuh, Indonesia. I believe we have chosen a venue that guarantees a successful technical conference amid the culture, delicacy and scenery of Payakumbuh, the city of “Rendang”.

The AES-Network aims to Promote Livelihood Through Food Security, Promote Future Smart and Green Mobility by Using Renewable Energy, Promote Prosperity by Equally Managing and Distributing the Sustainable Resources and Promoting Enjoyable Long-Life by using Natural Medicines With Free Health Care For All. The AES-Network was established in 2018 and already have memberships from 12 countries. Our members consist of Academicians, Scientists, Researchers, practitioners, professionals, and government officials from multidiscipline branch of knowledge, who gathered and contributed their expertise to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In particular, the network aims to alleviate the condition of those who in dire needs. In the future, we also expect to provide technical demonstrations, and numerous opportunities for informal networking for Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In this opportunity, we invited you to become our members and join our efforts for a better life to all of mankind.

As a team, we acknowledge the existence of mutual interest among university and college educators, researchers, activists, business sector, entrepreneurs, policy

makers, and all society members. We must promote the need to strengthen cooperation for establishing Security in Food, Renewable Resources, and Natural Medicines in Africa, Europe, and Asia.

The AES-Network believe, a firm foundation for mutual collaboration with the spirit of equality and partnership and thereby contribute towards sustainable development in these three regions.

Therefore, through networking, friendships, and joint efforts, the capacity of our network can be enhanced to address major challenges in securing the Food, Renewable Resources, and Natural Medicines in Africa, Europa, and Asia. Our Network goals are to increase the awareness of educators, researchers, scientific community, business sector, entrepreneurs, and policy makers in Africa, Europa, and Asia, that the future of a better world, lies within their responsibilities, and to improve the networking, mobility and mutual collaboration of scientific community, business sector, entrepreneurs, and policy makers in Africa, Europe, and Asia to energize the delivery of Sustainable Development Goals.

Finally, I hope that, by registering our network, you will be provided a common platform and support the exchange of knowledge, while at the same time, we offer constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrived at the best solutions to our terminal goal, Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care based on scientific evidence in Africa, Europa, and Asian region.

Thank You for Joining us!

**President**

**Assoc. Prof. Dr. Eng. Muhammad Makky**

**Welcome Message**  
**Head of Institute for Research and Community Service**  
**Universitas Andalas**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

It is with great pleasure that I welcome the participants of the SFRN 2019 in Payakumbuh, the city of “Rendang”, the prime of Indonesian delicacy.

In this esteem event, we share the knowledges, and imparted it to the people. The quest for knowledge has been from the beginning of time but knowledge only becomes valuable when it is disseminated and applied to benefit humankind. It is hoped that this conference will become a platform to gather and disseminate the latest knowledge which can be adopted for securing the food, resources, and health for mankind, in Asian, European and African region.

Academics, Scientists, Researchers and practitioners from multidiscipline branch of knowledge who gathered here today will be able to share and discuss new findings and applications of innovations for ensuring food security, in particular for those who reside in developing countries. It is envisaged that the intellectual discourse will result in future collaborations between universities, research institutions and industry both locally and internationally. In particular it is expected that focus will be given to issues on environmental and sustainability. Therefore, we urge to all participants, to establish a scientific network that will voice the needs

Researchers in the multi sectoral aspects related to the benefit of mankind have been progressing worldwide. Food is a basic right, while energy drive the world. Human need a lot of resources so the civilization can be flourished. But human is not immune, and thus, ones need to take care of their health regularly. Modern Agri-food systems is the foundations of a decent life, a sound education and the achievement of

the Sustainable Development Goals. Over the past decade, we have witnessed a chain reaction that threatens the very foundations of life for millions of the world's people. Rising energy prices drove up the cost of food and ate away the savings that people otherwise would have spent on health care or education. Unsustainable plantation management induced forest fire and posed haze hazard to the whole Sumatra island and our neighboring countries.

The human cost of the food and energy crisis has been enormous. Millions of families have been pushed into poverty and hunger. Thousands more suffering from the collateral effects. Over the past year, food insecurity led to political unrest in some 30 countries. Yet because the underlying problems persist, we will continue to experience such crises, again and again -- unless we act now. That is why we are here today.

We must make significant changes to feed ourselves, and most especially, to safeguard the poorest and most vulnerable. We must ensure safety nets for those who cannot afford food, or energy, nor even a health service. We must transform agricultural development, markets and how resources is distributed. We must do so based on a thorough understanding of the issues. That is the only possible way we can meet the Goals of Sustainable Development.

Thank You,

**Assoc. Prof. Dr.-Ing. Uyung Gatot S. Dinata,MT.**

**Opening Ceremony  
Rector of Andalas University**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

I welcome the opportunity to address you at this important event.

It gives me great pleasure in welcoming you to this 3<sup>rd</sup> Conference on "Security in Food, Renewable resources, and Natural Medicines (SFRN)" 2019. I am delighted that so many have accepted our invitation. I am particularly happy that we have in this room, dedicated individuals from so many stakeholder groups — including our most respected and distinguished guest “The ministry of Agriculture of the Republic of Indonesia”. We also welcome the mayor of Payakumbuh and the Regent of Lima Puluh Kota. We extend our welcome to the civil society, the private sector, international organizations; the science community; and others dedicated to help create an environment in which people can escape food insecurity. Imagine what we can do together if we make the security for all as an our top priority, and pull in the same direction. We can make a difference in the lives of millions.

Food is a basic right. Food security are the foundations of a decent life, a sound education and the achievement of the Sustainable Development Goals Access to medicines - a fundamental element of the right to health. Health is a fundamental human right, indispensable for the exercise of many other rights in particular the right to development, and necessary for living a life in dignity. Moreover, human rights principles and language are being used to support resource access claims as rights-based approaches empower individuals and groups to gain or maintain access to natural resources

Much progress has been made during the last decades but much more needs to be done. Millions of people are Insecure worldwide, meaning that they either starve or they do not know from where their next meal, health care or resources will come.

Much of the progress on security has occurred at the expense of our environment. With business as usual, we foresee that the production improvements during the next decade will be less than the last one, while the environmental degradation will continue, and health will deteriorate significantly. Without available resources to seek, mankind will become endanger species in a very short time.

Solutions to the security problems need to be designed and implemented within a new and rapidly changing environment. Globalization and sweeping technological changes offer new opportunities for solving these problems. A number driving forces or trends must be taken into account in developing appropriate action. Some of the action needed, such as appropriate technology for small farms, is not new but it must be cast in the new and changing global and national environment, taking into account new opportunities and risks. I hope that by providing a forum for knowledge exchange, this conference will help identify the action to be taken. Furthermore, this conference will help to provide constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrive at the best solutions.

In conclusion, even if those responsible give high priority to achieving sustainable security for all and back it up with action, the world may not achieve the goal by 2030. But we will be much closer than with business as usual. I urge all of us to provide the strongest support for this event, to enable securing the food for all in the closest time possible. It is my sincere optimism that through the accomplishment of the objectives of this event, we will come to an important step nearer to secure the food for all.

Finally, I would like to thank the organizing committee who have spent their utmost efforts to prepare and manage this event successfully. Let me conclude my remarks by wishing our guests happiness, good luck and great success in the conference.

May I announce now the opening of the “3<sup>rd</sup> International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019” in Payakumbuh.

Thank you.

**Rector,**  
**Prof. Tafdil Husni, SE, MBA, PhD**

**Welcome Message**  
**Director of Politeknik Pertanian Negeri Payakumbuh**



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikumwr.wb

I congratulate to all participants on the invitation and participate at our beloved campus Payakumbuh State Agricultural Polytechnic. I feel really honoured to welcome all of you at our event, the 3rd International Conference on Security in Food, Renewable Resources, and Natural Medicines (SFRN) 2019 at the Payakumbuh State Agricultural Polytechnic, Indonesia.

Food security is a very important aspect in a country's sovereignty. Food also determines the future direction of a nation. Many social and political fluctuation can also occur if food security is disrupted. Food availability that is smaller than its needs can create economic instability. This critical food condition can even endanger economic and national stability. In the current situation, there are many challenges in exteriorize food security, such as climate change, population, limited natural resources and other challenges both locally, regionally and globally.

Renewable resources are also our starting point to start sustainable development. Research on renewable resources is also very important as the solution in meeting the principles of sustainable development. As we know that Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability is the foundation for today's leading global framework for international cooperation - the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs)

The discovery of treatment based on local culture also contributes greatly to the good of humanity. Unfortunately, there are still many treatments that have not been carried out by scientific research. So, through this conference we hope it can be a trigger to increase in traditional plant-based treatments that not go through complex

chemical processes, so that the effectiveness of the pillars can be further suppressed and also contribute to the community's economy.

Finally, I would like to express my gratitude to all people who involved in organizing this event and to all of stakeholders who have helped to make this event go on successfully. Please accept my apologize for any shortage, Assalamu'alaikumwr.wb.

Thank you

**Ir. Elvin Hasman, MP**

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## **Utilization of Medicine Plants by Suku Anak Dalam (SAD) in Bukit Duabelas National Park Area of Sarolangun District, Jambi Province**

**Julistia Bobihoe, Sari Yanti Hayanti, Endrizal**

*Assessment Institute of Agriculture Technology (AIAT) Jambi,*

*Ministry of Agricultural, Indonesia*

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**Abstract.** The research activity was carried out in the Bukit Duabelas National Park in Pematang Kabau Village, Air Hitam District, Sarolangun Regency, Jambi Province, which aims to reveal the use of plants as traditional medicine by the Suku Anak Dalam. Activities carried out by exploring and characterizing the field. Exploration results found 13 types of medicinal plants, which have been cultivated and used as traditional medicine by the SAD community for the treatment of minor ailments such as fever, cough, runny nose, and so forth.

**Keywords:** Suku Anak Dalam (SAD), Bukit Duabelas National Park, Medicinal Plants, Jambi Province

### **INTRODUCTION**

Bukit Dua Belas National Park was designated based on the Decree of the Minister of Forestry and Plantation Number: 258 / Kpts-II / 2000 dated August 23, 2000, with a total area of  $\pm$  60,500 Ha. Following the Decree of the Minister of Forestry Number SK.4196 / Menhut-II / 2014 dated 10 June 2014, concerning the Determination of the Bukit Duabelas National Park Forest Area of 54,780.41 hectares located in Batang Hari Regency covering an area of 35,292.88 hectares, Tebo Regency covering 19,882, 25 hectares and Sarolangun Regency 8,605.26 hectares. Aside from being a place of life and livelihood for the Suku Anak Dalam (SAD), one of the specific objectives of the TNBD area designation is also to protect and conserve and develop medicinal plants, which are the living resources of the SAD (Anomymous, 2017).

Suku Anak Dalam (SAD) is a native ethnic minority that lives in the interior (forests) of Jambi and South Sumatra Provinces. It is estimated that the population of the Suku Anak Dalam is around 200,000 people. The majority of them live in the Bukit Duabelas National Park and 30 hill parks in the Bungo, Tebo, Sarolangun, and Batanghari districts. The term "Suku Anak Anak" is a term popularized by the Government through the Ministry of Social Affairs. Suku Anak Dalam means person who lives in the interior forest and is far from modernization and has unique

knowledge related to the use of plants as traditional medicine compared to other communities.

Medicinal plants in Indonesia are one of the groups of forest and garden commodities whose genetic erosion is relatively rapid. This is caused by several factors: (1) habitat destruction caused by the insistence on the need for land for production and shelter, utilization of forest products for industry or residence so that the habitat of medicinal plants is disturbed; (2) lack of attention to the cultivation of medicinal plants especially for species used in small quantities; and (3) the ability to regenerate slow medicinal plants, especially perennial plant species, moreover those taken from nature (Djauhariya and Sukarman 2002).

Medicinal plants are plants whose roots, stems, leaves, or fruit contains bioactive compounds which have the ability to treat various types of diseases. The number of medicinal plants in Indonesia that have been utilized is 2,518 species (Eisai, 1995 in Amik K and M. Sabran, 2004), and there are at least around 3,000 species of medicinal plants that have been successfully identified (Zuhud, 1998; Zuhud & Hikmat, 1998 in Amik K and M. Sabran, 2004), and around 300 species of plants have been used for traditional medicine (Hariana, 2007 in Zulfahmi and B. Solfan, 2010).

Medicinal plants in the Bukit Duadelas National Park area have long been using by the Anak Dalam Tribe (SAD) for traditional medicine even though it is only as natural first aid. This is because there have been many influences from outside communities, especially regarding health issues and changes in the life of the Suku Anak Dalam community (SAD) from traditional life to modern life, but nevertheless it does not mean the use medicinal plants as one of the local wisdom of the jungle are abandoned. At present, knowledge about traditional uses of plants by the Suku Anak Dalam community has not been well documented. Therefore, to document it, it is necessary to identify the diversity of medicinal plant species that are utilized by the Suku Anak Dalam community.

Given the high level of human activity in the forest area, the inventory and conservation of medicinal plants found in the area, especially those classified as rare, need to be eliminated. One form of protection for biodiversity is to carry out conservation in situ and ex situ (Amik K and M. Sabran, 2004). This activity aims to obtain information about the utilization and diversity of traditional medicinal plant species used by the Abak Dalam Tribe (SAD).

## **MATERIALS AND METHODS**

Exploration and characterization of medicinal plants were carried out in the Bukit Duabelas National Park, Pematang Kabau Village, Air Hitam District, Sarolangun Regency in 2016. This activity used a survey method in the field. The exploration began with pre-exploration activities, namely seeking information from relevant agencies and the community about the types and habitats of medicinal plants that exist in Sarolangun Regency. This information is then developed at the time of exploration to the target location, which is generally the area of origin and

distribution of plant species. Furthermore, searching and collecting samples of medicinal plants by relying on local communities as a guide and source of information, manuals of medicinal plants are also used to confirm the morphology.

Further exploration is carried out, namely tracking or exploring activities to find, collect, and examine certain types of germplasm to secure from extinction (Kusumo et al. 2002). The loss of genetic resources among others is caused by the use of superior varieties that make agriculture into monocultures, causing the loss of genetic resources that are largely unidentified (Krismawati. A and M. Sabran, 2004).

Exploration is carried out in stages by relying on sources and sources of information, both directly from key informants (key informants) and library data (Bompard and Kostermans 1985; Purnomo 1987 in Amik K and M. Sabran, 2004). In this connection carried out extracting information on the existence of plants, collection of plant samples and description of plants, conservation of samples of explored plants. Exploration is supported by information from farmers about their preference for genetic resources of medicinal plants. The data taken is the diversity of medicinal plants and the use of these plants in treating diseases. The data was collected through interviews conducted with SAD, community leaders, and staff from Bukit Duabelas National Park, as well as residents who have good knowledge about the diversity of medicinal plants.

## RESULTS AND DISCUSSION

The Medika Biota expedition in 1998 which was conducted by several institutions namely IPB, LIPI, UI and the Ministry of Health in the Bukit Duabelas and the Bukit Tigapuluh forest area, identified various types of plants and wildlife that have medicinal properties. From the information of the forest community in Air Hitam (Tumenggung Tarib), Small Kejasung, Kejasung Besar and Pasir Putih, The medical biota expedition identified 101 species of medicinal plants, 27 types of medicinal mushrooms and 9 types of wild animals that have medicinal properties (Anomymous, 2017).

The use of plants empirically to treat various types of diseases is still the choice of some residents in Indonesia. Data from basic health research in 2013 (Balitbangkes, 2013) shows that 15.7% of households in Indonesia still use traditional medicines. Research on medicinal plants has been widely carried out, such as research conducted by Indriati (2014) in (Nasution, 2018) about medicinal plants used by the Suku Anak Dalam in Tabun Village, District VII Koto, Tebo Regency, Jambi, obtained 39 species of medicinal plants incorporated in 33 families. Research conducted by Shanthi et al. (2014) in (Nasution, 2018) concerning traditional medicine for the care of women in the Surakarta Hadiningrat Keraton community, obtained 120 species of medicinal plants which are divided into 55 families. The results of this study indicate that the Indonesian community, especially the local community, has the ability to utilize various plant species for traditional medicine (Nasution *et al*, 2018).

## B. Natural Medicine

Based on the results of interviews with assistants from the Bukit Dua Belas National Park Office (TNBD), there are many types of medicinal plants in the region. Some diseases that can be cured by using medicinal plants are malaria, jaundice, fever, dizziness, aches, smooth delivery, sprains, bloody bowel movements, diarrhea, cough with phlegm, and others. Some types of plants as medicinal ingredients include turmeric root wood (*Arcangelisia flava*) mixed with ako habu (*Stephania japonica*), both boiled to treat jaundice. Turmeric root wood is used as an antidote drug, malaria medicine, jaundice, fever. Turmeric root wood plants have the status of scarcity and the threat of "prone", because what is used as medicine is the wood taken by cutting down trees, the threat of population extinction is relatively high, especially slow growth so that regeneration is very difficult (Sulistiarini, 1992 in Setyowati, 2003).

The bloody stools can be treat by drinking the boiled water of Tunjuk-langit (*Helminthostachys zeylanica* (L) Hook) roots. Consuming tea root of the Ki Sampang (*Evodia latifolia*) for pregnant mother can help facilitate childbirth.

The types of medicinal plants that are still used by the SAD community for the treatment of minor ailments such as diarrhea, fever, cough, and runny nose are shown in Table 1. The parts of plants used include; stems, roots, leaves, bark, and root bark. Although, according to SAD, the types mentioned above are drugs, it is still necessary to do further chemical content tests to ensure the types are as data for future development.

The results of the phytochemical test prove that the medicinal plants used by SAD in the TNBD region do indeed contain medicinal chemicals, which is very potential to be developed. Even so, chemical tests on medicinal plants are need a long time and the costs are large enough to be able to determine the type of disease or its benefits for treatment. The Balai TNBD continues to encourage efforts to develop these natural medicinal plants with the long-term goal of medicinal plants in the TNBD to be developed by the SAD / surrounding communities as raw materials for industrial-developed medicines (Anomimous, 2017). The results of the exploration of medicinal plants in Bukit Dua Belas National Park (TNBD) as presented in Table 1.

## B. Natural Medicine

Table 1. The Exploration Results and Characterization of Medicinal Plants in Bukit Duabelas National Park, Sarolangun Regency, Jambi Province.

No	Habitus		Useful parts/The benefits
1.	Uka Satolu/Satolu root ( <i>Pericampylus glaucus</i> (Lmk) Merr)		Root/medicine of malaria
2.	Turmeric Root / Yellow		Root/ Poison antidote, malaria medicine, jaundice, fever
3.	Tampus ( <i>Prunus sp</i> )		Bark epidermis/ Overcome dizziness/ hangover
4.	Brotowali ( <i>Tinospora crispa</i> )		Leaves/Overcoming sprains or aches
5.	Shattered wood ( <i>Evodia latifolia</i> )		Roots/ Helps facilitate labor
6.	Point Sky ( <i>Helminthostachys zeylanica</i> (L) Hook)		Root/ Bloody bowel medicine
7.	Sardemo/Salendemo		Leaves/Treating cough pain in children
8.	Salung ( <i>Psychotria viridiflora</i> )		Leaves/Overcoming the smears in the baby's head

No	Habitus		Useful parts/The benefits
9.	Kedondong Point ( <i>Santiria laivigata</i> )		Root Skin/Streamlining labor
10	Siluk ( <i>Gironiera nervosa</i> )		Leaves and roots/ Overcome cough with phlegm
11	Palm Ibul ( <i>Korthalsia sp</i> )		Umbut/Prevents miscarriage
12	Sempalas root		Trunk/ Anti-diarrhea medication
13	Pungguk cane ( <i>Costus speciosus</i> (Koenig) Sm)		Trunk, Leaves/ Overcoming itching from nettle, Treating heartburn and fever

Source : Bobihoe Julistia et al (2016)

Identification of the diversity of medicinal plant species is essential as a basis for the development of traditional medicines mentioned above. But this information can also lead to exploitation that can result in a decline in plant populations. In contrast, the level of knowledge and utilization of plants will decrease along with the decrease in diversity of plant species in the region. Therefore the community must utilize plants wisely and wisely, so that they can provide optimal benefits for them. To avoid exploitation, domestication of selected medicinal plants for mass cultivation can be carried out (Nasution *et al.*, 2018).

Knowledge about medicinal plants must also be maintained, preserved and passed on to the younger generation so that knowledge is not lost. This is in line with the results of research by Van Sam *et al.* (2008) and Kartawinata (2010) in Nasution *et al.* (2018), which shows that the rate of species loss is in line with the rate of loss of traditional knowledge.

## B. Natural Medicine

Medicinal plants in the Bukit Duabelas National Park area have long been using by the Orang Rimba for traditional medicine, even though it is only as natural first aid. This is because there have been many influences from outside communities, especially regarding health issues and changes in the life of the Suku Anak Dalam community (SAD) from traditional life to modern life. However, this does not mean the use of medicinal plants as one of the local wisdom of the forest community left behind.

## CONCLUSION

1. Medicinal plants are widely spread in the Bukit Duabelas National Park area, Sarolangun Regency, Jambi Province, which has efficacy as a cure for malaria, jaundice, fever, dizziness, aches, smooth delivery, sprains, bloody stools, diarrhea, cough with phlegm, etc. Suku Anak Dalam (SAD) community utilizes these medicinal plants for their own needs. Plant parts that are used for medicine include; stems, roots, leaves, bark and root bark.
2. The results of exploration conducted in the Bukit Dua Belas National Park area, Sarolangun Regency, have found 13 herbal medicine associations. For the preservation of medicinal plants, conservation efforts by various related parties need to be carried out for their preservation, both in situ and ex situ.

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