

Exploration Of Local Wisdom in Pariaman City: A Contextual Approach to Biology Learning

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ABSTRACT

Local wisdom refers to the knowledge, values, and cultural heritage of a community that is passed down through generations and needs to be preserved. One way to achieve this is by integrating local wisdom into education, allowing students to recognize and appreciate the richness of their local culture. The purpose of this study is to explore local wisdom in the fields of environmental biology, food and health, reproduction, and application in Pariaman City. These four areas serve as a contextual approach that connects Biology material with students' daily lives. This study employed a descriptive method with a qualitative phenomenological approach. The subjects consisted of 10 informants selected through purposive sampling. Data were collected through observation and in-depth interviews, and analyzed using the Miles and Huberman model. The findings reveal that local wisdom in Pariaman City encompasses the four identified fields, each of which can support contextualized Biology learning. In conclusion, integrating these aspects of local wisdom into education not only enriches Biology instruction but also fosters cultural awareness among students. Future research is recommended to examine effective strategies for implementing local.

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INTRODUCTION

Indonesia is a country rich in cultural diversity, with each region possessing unique traditions and local wisdom that continue to develop over time. Local wisdom, as noted by Salim and Aprison, (2024) is closely connected to culture, religion, and the environment, and functions as a way for communities to sustain their lives through values, beliefs, and practices passed down across generations. In the context of the Minangkabau culture, this heritage remains strong, including in

Pariaman City, where local wisdom is practiced in accordance with geographical and environmental conditions.

Pariaman City, located on the west coast of Sumatra Island, is characterized by its extensive coastal areas and marine resources. These natural conditions have shaped a variety of local wisdom practices, ranging from the use of natural materials in traditional ceremonies to the processing of marine resources as food and medicine. For instance, according to Manggara and Ofianto, (2023) the Tabuik ceremony incorporates materials such as river soil, banana trees, and bamboo. Research from Inara, (2020) typical foods like sala lauak and processed seafood reflect both cultural identity and nutritional value. Such practices illustrate how local wisdom is deeply embedded in the daily lives of the Pariaman community.

Despite the richness of these traditions, previous studies have not comprehensively explored how local wisdom in Pariaman can be integrated into education, particularly Biology learning. While research in other regions has highlighted the role of ethnoscience in contextualizing Biology concepts (Arifin et al., 2024; Carolina et al., 2024; Yekyastuti et al., 2024). A research gap remains regarding the systematic integration of local wisdom into four specific fields of Biology: environmental biology, food and health, reproduction, and applied biology. Addressing this gap is essential to ensure that Biology education not only conveys abstract knowledge but also connects students with their cultural environment, thereby fostering both scientific understanding and cultural preservation.

Advice from the past about maintaining body health, especially reproductive organs, and things to consider in choosing a partner for marriage have also been passed down from generation to generation, referring to the field of reproductive biology. In line with the opinion of Khoiruddin et al., (2024) to create a harmonious household and good offspring, it is important to consider various things and listen to the advice of parents and elders. The practice of selecting plants and understanding local ecology in agriculture and animal husbandry is one example of local wisdom in Pariaman in the applied field. According to Agustina et al., (2020) local wisdom refers to local characteristics that have implications for sustainable policies in agricultural aspects such as plant growth and the use of compost.

The rapid progress of the times, technology and cultural currents are the main challenges in order to maintain local wisdom that has been created since the past. In order for this local wisdom to be maintained, efforts that can be made are to introduce it to students through learning materials

available in schools, including Biology learning. The scope of Biology learning such as the environment, food and health, reproduction and applications are expected to be able to explain the meaning of practices that have long been applied from generation to generation. Biology learning, the material of which is abstract, requires a learning approach that can make students close to the material. A contextual approach is believed to make students feel close to the learning material. According to Ramadhani et al., (2024) this approach prioritizes original learning in accordance with what happens in the real world of students.

Several previous studies have examined the integration of ethnoscience values or local wisdom in Biology learning. In the study Carolina et al., (2024) stated that the knowledge that has long been applied by the Lampung community in culinary ethnoscience can be integrated into Biotechnology learning. The study of Yekyastuti et al., (2024) examining the local wisdom of "manongkah kerang" revealed that the implementation of this local wisdom in the material on Biodiversity, Movement Systems, and Ecosystems. Arifin et al., (2024) in their study stated that the integration of ethnoscience in the "pedaq api" tradition can be a source of learning Biology. While previous studies have highlighted the role of ethnoscience in specific cultural practices, they have not provided a comprehensive framework that integrates local wisdom across multiple domains of biology learning. This study contributes by systematically exploring local wisdom in Pariaman City within four key biological domains: environmental biology, food and health, reproduction, and applied biology. By linking these domains to Biology learning materials, the research offers a contextual approach that directly addresses the journal's focus on strengthening the connection between local cultural practices and science education. In doing so, the study not only documents cultural heritage but also provides practical implications for curriculum development, teaching strategies, and the promotion of meaningful learning in Biology classrooms.

RESEARCH METHODS

This study was conducted from 4 to 20 May 2025 in Pariaman City using a descriptive method with a qualitative phenomenological, approach which in this context refers to capturing the lived experiences and cultural meanings of local community members regarding biological aspects of local wisdom. The subjects of this study were 10 informants selected through purposive sampling, consisting of parents, community elders, and residents who had lived in the area for at least five years. Data collection was carried out through direct observation and in-depth interviews. Observations included participation in traditional ceremonies, food preparation activities, and

agricultural practices, while interviews used semi-structured questions to allow informants to share experiences and knowledge freely.

The indicators explored were grouped into four categories of local wisdom, namely: environmental biology (e.g., the use of natural materials in rituals), food and health (e.g., traditional food preparation and medicinal plants), reproduction (e.g., cultural advice related to marriage and reproductive health), and applied biology (e.g., agricultural techniques, composting, and plant selection). These indicators served as guidelines for both observations and interviews.

To ensure the validity of the data, triangulation was applied by comparing information from observations, interviews, and documentation. Member checking was conducted by confirming interpretations with several informants, and peer discussions with fellow researchers were held to minimize bias. Data analysis followed the Miles and Huberman model, which includes data reduction, data display, and conclusion drawing.

RESEARCH RESULT

Based on the results of interviews with several sources, it was found that there are various local wisdoms in Pariaman City. This local wisdom consists of four fields of biology studies including the environment, food and health, reproduction and applied. The following is a table of grouping the four fields of local wisdom in Pariaman City.

Local wisdom in Pariaman City related to environmental biology reflects how communities manage and preserve nature through cultural practices and proverbs. These practices show that environmental awareness has long been integrated into daily life and traditional ceremonies.

Table 1. Exploration Results in the Field of Environmental Biology

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
1.	"Hoyak tabuik, hoyak hosen" – Mrs. Epi	Tabuik is built from natural materials such as bamboo, soil, wood, rattan, flowers, paper, cloth, and other ornaments.	Biodiversity Material, students identify the types of plants used.
2.	"Pariaman tadanga langang, batabuik makonyo rami" – Grandma Andah	"Pariaman tadanga langang" represents a relatively stable ecosystem condition or natural potential that has not been fully disturbed. "Batabuik makonyo rami" symbolizes the entry of disturbances that can significantly change ecosystem dynamics.	In Biodiversity Material, students can discuss the environmental impact on the Tabuik procession and how local communities utilize certain plants for cultural purposes and traditional rituals.
3.	"Aia putiah, jan dikaruahi"	The importance of water resource conservation and waste management.	Ecosystem material, especially aquatic ecosystems and the impact

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
	– Mrs. Beti		of human activities on the environment
4.	“Hujan ameh di kampung urang, hujan ” – Mr. Rustam	Golden rain in other people's villages, stone rain in our own. This proverb implies that humans often ignore or damage their own environment (stone rain) while coveting resources elsewhere (golden rain).	Environmental Pollution Material especially maintaining environmental sustainability.

The results in Table 1 demonstrate that natural materials such as bamboo, river soil, and wood are widely used in the Tabuik ceremony, emphasizing the role of biodiversity in cultural activities. Proverbs such as “Aia putiah, jan dikaruahi” highlight the importance of water conservation, while “Hujan ameh di kampung urang, hujan batu di kampung sendiri” reflects the community’s awareness of environmental pollution. These findings indicate that local wisdom in environmental biology can be directly linked to Biology learning materials such as biodiversity, ecosystems, and environmental sustainability.

Food and health-related wisdom in Pariaman highlights the use of local plants and seafood for nutrition, medicine, and cultural identity. This shows how biological knowledge is embedded in traditional diets and health practices.

Table 2. Exploration Results in the Field of Food and Health Biology

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
1.	“Sala lauak jo nasi sala kearifan lokal Pariaman” – Mrs. Epi	Using spices and fish or types of seafood that contain nutrients for the body.	Digestive System material such as the nutritional content of fish or seafood, the digestive process and the enzymes involved.
2.	“Karupuk baguak asli khas Pariaman” – Grandma Yuharni	Snacks made from melinjo known as emping melinjo. Roasted with sea sand from Pariaman directly to make it fragrant. Melinjo contains nutrients for the body.	Classification of Plants such as Gymnospermae. Human Digestive System Material, nutrient content in melinjo chips.
3.	“Ladu arai pinang subana punyo rang Pariaman” – Mrs. Rina	Ladu arai pinang is a typical snack from Pariaman. Made from rice flour with arai pinang mold, it has various flavors starting from original, sala, and jengkol containing nutrients for the body.	Human Digestive System Material on food content.
4.	“Dek ameh sagalo kameh, dek padi sagalo jadi.” – Mrs. Sur	Rice is the main food source. Rice produced by rice is an important source of carbohydrates for the body.	Human Digestive System material on food content, digestion processes, and the enzymes involved.

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
5.	Akar alang-alang (<i>Imperata cylindrica</i>) – Mrs. Vira	Contains benefits for the body such as relieving internal heat, pain, and lowering high blood pressure.	Classification of Living Things Material includes the classification of plants, namely Monocotyledons or Poaceae. Structure and Function of Plants and Benefits of Plants.
6.	Daun Jarak (<i>Jatropha curcas</i>) – Mrs. Vira	Reduces body fever because it contains alkaloids, saponins and other compounds.	The material on Classification of Living Things includes the classification of plants, namely the Euphorbiaceae family, Structure and Function of Plants and Benefits of Plants.
7.	Daun Sungkai (<i>Peronema canescens</i>) – Mrs. Vira	Contains benefits for the body such as curing malaria due to the flavonoid, saponin and other content.	The material on Classification of Living Things includes the classification of plants, namely the Verbenaceae family, Structure and Function of Plants and the Benefits of Plants.
8.	“Daun Balimbing tunjuak” (<i>Averrhoa bilimbi</i>) – Mrs. Vira	Lowers blood pressure, anti-bacterial, reduces acne, coughs and colds due to phenol, polyphenol and other compounds.	The material on Classification of Living Things includes the classification of plants, namely the Oxalidaceae family, Structure and Function of Plants and the Benefits of Plants.
9.	“Bungo Rosella” (<i>Hibiscus sabdariffa</i>) – Mrs. Vira	Increases immunity, treats coughs and colds, is an antioxidant and anti-inflammatory because it contains organic acids, anthocyanins and others.	The material on the Classification of Living Things includes the classification of plants, namely the Malvaceae family, the Structure and Function of Plants and the Benefits of Plants.

As shown in Table 2, typical foods such as sala lauak and karupuak baguak not only represent cultural identity but also provide nutritional value that can be integrated into lessons on the digestive system and plant classification. The use of medicinal plants such as alang-alang, sungkai, and rosella demonstrates the community's understanding of natural remedies, which can be connected to topics in plant biology and human health. These findings underline how local wisdom in food and health supports contextual learning that links traditional practices with modern biological concepts.

Wisdom related to reproductive biology in Pariaman reflects cultural values and practices that support family health, genetics, and reproductive awareness. These traditions provide both biological knowledge and moral guidance for future generations.

Table 3. Exploration Results in the Field of Reproductive Biology

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
1.	Daun Katuk (<i>Sauropus androgynus</i>) – Mrs. Syefniwati	Katuk leaves are famous for their properties that can increase breast milk production for pregnant women.	The material on Classification of Living Things includes the classification of plants, namely the Phyllanthaceae family, Structure and Function of Plants and their benefits.
2.	“Aia Karambia Mudo Hijau (<i>Cocos nucifera</i> L.) – Mrs. Vira	Contains electrolyte compounds to help restore the mother's energy after giving birth, relieve menstrual pain and increase stamina.	Human Reproductive System Material, Classification of Living Things including the classification of plants, namely the Arecaceae family, Structure and Function of Plants and Benefits of Plants.
3.	“Hiduik baraka, baukue jo bajangko” – Mrs. Meri	Living with careful calculations and planning as recommended for family planning, including the number of children, financial readiness, and mental readiness in educating offspring.	Human Reproductive System Material on Contraceptive Methods.
4.	“Kok padi nan ditanam ndak mungkin ilalang nan ka tumbuhan” – Mrs. Meri	Good genetic seeds (good parents) will produce good offspring, and vice versa.	Genetic Material
5.	“Anak dipangku, kemenakan dibimbiang” – Mr. Rustam	Ensuring the best conditions for marriage to ensure the birth of a healthy baby. As well as the responsibility to spread knowledge and good reproductive health practices to the next generation or wider family members.	Human Reproductive System Material.

The data in Table 3 reveal that plants such as katuk leaves and young coconut water are traditionally used to support women's reproductive health, such as increasing breast milk production and restoring energy after childbirth. Proverbs like “Hiduik baraka, baukue jo bajangko” emphasize family planning, while “Kok padi nan ditanam ndak mungkin ilalang nan ka tumbuhan” conveys genetic principles. These examples illustrate how reproductive health, genetics, and family values are integrated in local wisdom, making them relevant to Biology lessons on the reproductive system and inheritance.

Applied biology wisdom in Pariaman shows how local communities use biological processes in agriculture and food preservation, reflecting practical knowledge passed down across generations.

Table 4. Exploration Results in the Field of Applied Biology

No.	Local Wisdom or Interview Quotes	Relation to Biology	Integration in Biology Learning
1.	Asam Durian – Mrs. Syefniwati	Durian sour is a side dish for rendang or as a main dish. The process involves fermentation.	Conventional material covers the role of microorganisms in fermentation and the benefits of fermented products.
2.	“Pupuk Kompos” – Mrs. Rustam	Composting involves the process of decomposition of organic materials by various microorganisms.	Ecosystem material on nutrient cycles and the role of decomposers

As presented in Table 4, the fermentation of asam durian highlights the role of microorganisms in biotechnology, while composting practices show the importance of decomposers in nutrient cycles. These findings suggest that applied local wisdom can be directly linked to Biology learning materials on biotechnology and ecosystems, thereby strengthening the connection between classroom learning and community practices.

Based on the table above, it is revealed that Pariaman City has local wisdom in the fields of environmental biology, food and health, reproduction and applied. These four fields can be introduced to students through various materials in Biology learning. This effort involves the use of a contextual approach in learning. A contextual approach is a method used by teachers so that learning materials feel close to students' daily lives. Using a contextual approach, it is hoped that students can relate learning materials to real life conditions, so that learning becomes more meaningful and easier to understand.

DISCUSSION

The findings of this study reveal that local wisdom in Pariaman City can be categorized into four domains: environmental biology, food and health, reproductive biology, and applied biology. Each domain demonstrates how cultural practices embody biological concepts that can be contextualized in learning. To ensure systematic understanding, the discussion is organized according to these four domains, with an emphasis on how each contributes to strengthening the integration of local wisdom into Biology education.

1. Environmental Biology

a. “Tabuik Pariaman”

Based on the results of interviews with several sources, it was stated that the “Tabuik” cultural festival is very well-known as the local wisdom of the Pariaman community. The “Tabuik” celebration activities use natural materials to make Tabuik such as bamboo, cloth, soil, flowers,

and decorations from plants. The process of taking river soil and storing it in bamboo with a white cloth base called “daraga”. The process of taking soil from the river symbolizes Husein's grave. Therefore, the Tabuik process series is also known as "hoyak hosen, hoyak tabuik". Making “Tabuik” uses banana stems by cutting them down in one fell swoop at night, symbolizing the courage of Imam Husein's son in seeking revenge. According to Rahman and Zuwardi, (2022) cutting down bananas is also a symbol of people who died in war. The use of bungo salapan or eight flowers in the tabuik element contains a protective meaning. The eight flowers contain the meaning of the eight tribes in Minangkabau. This depiction shows the closeness of the community to nature and an understanding of biodiversity. This symbolism can be interpreted as a form of respect or reminder of the importance of other living things in the ecosystem.



Figure 1. Tabuik

Furthermore, the resource person also said that there is a term "Pariaman tadanga langang, batabuik makonyo rami, dek sanang tadangan sanang, baolah tubuh tompang diri". The most important message is that "makonyo rami" which mean of “crowds” or human activities must be managed wisely so as not to damage the “tadanga langang” which means "tranquility" or fundamental ecological balance. The metaphor also describes the dynamic cycle between relatively calm environmental conditions and increasing environmental pressure due to large-scale human activities. In biology learning, this “Tabuik” event can be integrated into the Biodiversity Material. Students become more aware of the learning material because the event is closely related to everyday life. In line with the research of Sudarmi et al., (2024) which states that a contextual approach by exemplifying events that are close to students' lives has an impact on the level of science process skills.

b. Water Resources Conservation and Waste Management

The proverb that states "Aia putiah jan di karuahi." The resource person explained that this is advice not to damage something that is already good. In the context of environmental biology, this is a strong warning not to pollute vital natural resources such as clean water. According to Sholahuddin and Rodhi, (2024) water is an essential component for life and the sustainability of aquatic ecosystems. Muddying water means destroying habitats, threatening aquatic organisms, and endangering human health. Integration into Biology learning with a contextual approach, namely in Ecosystem material, especially aquatic ecosystems and the impact of human activities on the environment.

c. Using Resources Wisely and Realizing There Are Limitations

The proverb that says "hujan ameh di rantau urang, hujan batu di kampung awak" illustrates the tendency to destroy one's own environment in pursuit of resources elsewhere. According to informants, this reflects the impact of unsustainable practices and environmental injustice, with certain communities bearing the brunt of degradation. According to Alwasi et al., (2024) emphasize the importance of caring for the environment and resources to improve quality of life. Integration into Biology learning with a contextual approach, namely in the Environmental Pollution material, especially maintaining environmental preservation and types of resources.

2. Food Biology and Health

a. "Sala Lauak" and "Nasi Sala"

Based on interviews with sources, there are several local wisdoms in the field of food and are already known by tourists. "Sala lauak" or fish sala is a typical Pariaman food. Sala lauak is a fried food in the form of small balls.



Figure 2. Fish Sala

The main ingredients are made from rice flour and salted fish or anchovies that have been ground. The fish sala in the sala rice restaurant generally consists of bada anchovy sala, squid, crab sala, shrimp sala, baledang fish sala, and situhuak fish sala.



Figure 3. Types of Side Dishes on The Sala Rice Menu

In terms of biology, rice (*Oryza sativa*) is a cereal grain that is rich in carbohydrates (especially starch as a source of energy). Rice flour also contains a certain amount of fiber. Anchovies (*Stolephyrus* sp.) also contains omega-3 fatty acids which are good for heart and brain health. Research by Indriyani et al., (2025) reported that anchovies contain a high level of calcium and iron, Research by Puspitasari et al., (2022) stated that squid contains fatty acids, carbohydrates, protein, vitamins, phosphorus, calcium and iron. According to Ujianti and Muflihati, (2020) crabs have a high protein content and omega 3 fatty acids. Tiger prawns (*Penaeus monodon*) contains vitamin B12, vitamin B3 niacin, vitamin E, and vitamin A. According to Budiati, (2021) shrimp is rich in calcium, phosphorus, and fat content of around 0.2%. The integration of local wisdom can be reflected in the Digestive System material such as the nutritional content of fish or seafood, the digestive process and the enzymes involved.

b. Melinjo Chips (*Gnetum gnemon*)

Melinjo chips (*Gnetum gnemon*), or "karupuak baguak" in Minang language, is a typical Pariaman cracker made from melinjo seeds which is a typical Pariaman snack. Based on the results of interviews with sources, it was stated that the process of making melinjo chips uses special sand, namely Pariaman beach sand. This kind of making has also been passed down from generation to generation. This sand functions to provide a delicious and soft taste. The duration of roasting melinjo seeds according to Sugiyanto et al., (2022) is approximately two to four minutes, the chips will be softer and easier to pound with optimal results if the chips are still hot. This sand also cannot be replaced with other sand. Melinjo chips are rich in nutrients such as carbohydrates, protein, calcium, vitamin B, fat, iron. Integration into Biology learning such as in the Classification

of Plants material such as Gymnospermae. Human Digestive System material, nutrient content in melinjo chips.



Figure 4. Melinjo Chips

c. Ladu Arai Pinang

Ladu Arai Pinang is a traditional snack from Pariaman with a savory and crunchy flavor. According to sources, its name and design are inspired by the flower pattern of the pinang (*Areca catechu*) tree, with a flat dough patterned with straight lines resembling chips. There have also been many variations of this ladu arai pinang, starting with the original taste, the sala taste from a mixture of budu fish (*Scomberomorus guttatus*) and jengkol (*Archidendron pauciflorum*) flavor. Supported by the opinion of Govi et al., (2024) who stated that ladu arai pinang is a typical food from Pariaman consisting of the main composition of rice flour. The content of starch, amylopectin, and starch in this ladu gives a hard and crunchy taste. The resource person also said that making this ladu uses betel lime to provide a strong structure to the Ladu. Based on research by Hidayah et al., (2023) the content of substances in betel lime that can mix with water makes the dough hard and this compound is able to make the texture of the Ladu crispy. The starch contained in rice flour when processed with betel lime will make the starch crispy. The integration of this explanation can be studied in the material on the Human Digestive System and Food Substance Content.



Figure 5. Ladu Arai Pinang

d. Rice is the Main Food Court

Rice is the main food source. This proverb emphasizes the importance of the availability of rice food (*Oryza sativa*) as the basis for survival and well-being. The resource person said that South Pariaman is rich in rice commodities. Rice produced by rice is an important source of carbohydrates for the body. According to Safarillah et al., (2025) in terms of nutritional content, rice contributes an average of 1,440.84 kilocalories of energy, 35.00 grams of protein, and 6.39 grams of fat per capita per day. Integration in Biology learning, namely in the Human Digestive System Material, food content, digestion processes, and enzymes involved.

e. Cagongrass Root (*Imperata cylindrica*)

The resource person stated that South Pariaman has many Alang-alang plants. This plant is useful for treating various diseases and anti-inflammatory. According to Afriannisa et al., (2025) bioactive compounds such as flavonoids, phenolic acids, and imperanene contained in these roots contribute to various pharmacological effects such as anti-inflammatory, antipyretic, and antimicrobial. It can be integrated into the Classification of Living Things material including the classification of plants, namely Monocotyledons or Poaceae and the Structure and Function of Plants and the Benefits of Plants.



Figure 6. Cagongrass Root (*Imperata Cylindrica*)

f. Sungkai leaves (*Peronema cenescens*)

The Pariaman community has long used boiled sungkai leaves for medicinal plants. Research from Humaira and Abeiasa, (2023) states that sungkai leaves are useful for curing malaria, reducing body heat because they contain saponin, tannin, steroid, and flavonoid compounds. The integration of the use of these leaves can be studied in the Classification of Living Things material including the classification of plants, namely the Verbenaceae family, Plant Structure and Function and Plant Benefits.



Figure 7. Sungkai (*Peronema cenescens*)

g. “Balimbiang Tunjuak” Leaves (*Averrhoa blimbi*)

This leaf decoction is used to lower blood pressure, antibacterial, reduce acne, cough and cold. Research from Saleh et al., (2023) the leaves of this plant contain flavonoids, alkaloids, phenols, and saponins. The antimicrobial ability of this compound is able to inhibit *Acne vulgaris* bacteria or the cause of acne. Integration of the use of these leaves can be studied in the Classification of Living Things material including the classification of plants, namely the Oxalidaceae family, Plant Structure and Function and Plant Benefits.



Figure 8. “Balimbinag Tunjuak” (*Averrhoa blimbi*)

h. Castor Leaves (*Jatropha curcas*)

Castor oil leaf water compresses have long been used by the Pariaman community to reduce body heat. The leaves can also be placed on the stomach to speed up the reduction of body heat. According to research by Waslih et al., (2024) castor oil leaves contain glycosides, quercetin, polyphenols, steroids, flavonoids and saponins. The presence of flavonoids, saponins, phenols, and alkaloids makes them effective in reducing body heat. The integration of the use of these leaves can be studied in the Classification of Living Things material including the classification of plants, namely the Euphorbiaceae family, Plant Structure and Function and Plant Benefits.



Figure 9. Castor (*Jatropha curcas*)

i. Rosela Flower (*Hibiscus sabdariffa*)

This plant has been used for generations as a herbal plant. The source said the flowers are brewed and made into tea. This flower is believed to be able to lose weight, increase immunity. Umiyati et al., (2024) stated that this flower decoction is rich in antioxidants so that it can increase immunity. Research from Malinda and Syakdani, (2020) the red color of the petals of this flower indicates anthocyanin compounds that play a role in counteracting free radicals. Anthocyanins have a conjugated double bond system so that they can turn them into antioxidants. Other compounds in rosella flowers are flavonoids, phenols, and polyphenols as anti-diabetics, anthocyanins and cyanidins as hypertenis and antibacterial because they have protocatechuic, polyphenol and flavonoid compounds.



Figure 10. Rosela (*Hibiscus sabdariffa*)

3. Reproductive Biology

a. Katuk Leaves (*Sauropus androgynus*)

Based on the results of interviews with sources, katuk leaves have been used naturally to facilitate breast milk. According to Triananinsi et al., (2020) the polyphenyl and steroid content

can provide a prolactin reflex so that it successfully stimulates the alveoli in producing breast milk. These leaves also trigger the emergence of the hormone oxytocin so that it can facilitate the release of breast milk. There is a hormonal influence from the estrogenic properties of the chemical compound sterol. Research from Yolanda et al., (2022) states that the form of effort that can be made to increase the development and health of babies is by providing exclusive breastfeeding. Mother. These leaves are also recommended for mothers who have just given birth to facilitate breast milk by consuming this katuk leaf extract. The integration of the use of these leaves can be studied in the Classification of Living Things material including the classification of plants, namely the Phyllanthaceae family, Plant Structure and Function and Plant Benefits.



Figure 11. Katuk (*Sauropus androgynus*)

b. “Aia karambia Mudo Hijau” (*Cocos nucifera* L.)

“Aia karambia mudo hijau” or green young coconut water. The resource person stated that Pariaman is famous for its many coconut commodities. The use of coconut as a medicine has also been used for a long time. The high electrolyte content in coconut water is believed to be able to replace body fluids, relieve menstrual pain and restore stamina. Supported by research by Menda et al., (2024) which states that it is more efficient to give young coconut water to intranatal mothers when pushing during labor. The presence of potassium compounds can restore stamina quickly, in addition, the content of nitrogen, minerals, phosphorus, chlorine, sulfur and iron is important for body health. The material on the Human Reproductive System, Classification of Living Things including the classification of plants, namely the Aracaceae family, Structure and Function of Plants and Benefits of Plants.



Figure 12. Green Young Coconut Water (*Cocos nucifera* L.)

c. Carefull Planing when Starting a Family

Recommendations for family planning, including the number of children, financial readiness, and mental readiness in educating offspring. This proverb is also related to an understanding of body boundaries and reproductive health that need to be maintained. There is a term KB or family planning. The resource person said that this term has been passed down from generation to generation as a reference in determining the number of children. In line with the research of Pragita et al., (2021) the KB program has been around since the New Order and was then passed down from generation to generation. The integration of this explanation can be studied in the material on the Human Reproductive System, especially the material on contraceptive methods.

d. Seed of Good Genes

The resource person stated that there was a lot of advice about marriage from previous parents. Previous people believed that good offspring came from good parents, and vice versa. The resource person further explained that it is important to be careful in choosing a partner in order to produce a quality generation. Research from Yantika et al., (2024) stated the importance of having knowledge about the criteria for choosing a good partner in order to produce a harmonious household. The integration of this explanation can be studied in the material on Genetics or heredity.

e. Family Protection

Ensuring the best conditions for marriage to ensure the birth of a healthy baby. Responsibility for disseminating knowledge and good reproductive health practices to the next generation or wider family members. Reminding pregnant women to provide adequate nutrition and a healthy environment to support optimal fetal development. Supported by research from Retnaningtyas et al., (2022) the need for adequate nutrition will increase during pregnancy. It is

important to pay attention to the types of food and nutritional content consumed by pregnant women. The integration of this explanation can be studied in the Reproductive System material.

4. Applied Biology

a. Asam Durian (*Durio zubenthinus*)

“Asam durian” or durian Acid is the result of biotechnological fermentation of durian fruit (*Durio zubenthinus*) which is left for a certain time until it produces a distinctive sour taste from lactic acid bacteria (*Lactobacillus* sp.). Durian acid can also contain distinctive aroma compounds such as esters, alcohols, and sulfur compounds that are formed during fermentation. The resource person stated that the characteristic of Pariaman durian acid from West Sumatra is often combined with anchovy (*Stolephorus indicus*), ground chili to add a fragrant aroma and turmeric leaves. According to Rachmawati et al., (2021) turmeric leaves give a distinctive aroma to cooking and enhance the taste and aroma of cooking. According to Ardilla et al., (2022) this durian fruit is classified as a kylamteric fruit which causes this fruit to need to be processed specially so that it lasts a long time in storage. The process takes four to seven days. The integration of this explanation can be studied in the Biotechnology material.

b. Compost Fertilizer

The resource person stated that the form of waste management efforts is by making compost fertilizer which is beneficial for plants. The Pariaman City Government has processed organic waste into compost for the needs of fertilizing city parks. Compost making involves the process of decomposition of organic materials by various microorganisms. Research by Muhelni et al., (2024) from using Black Soldier Fly larvae as waste decomposing agents was able to produce quality compost containing macro elements such as nitrogen, potassium, and phosphorus. Microorganisms in compost help in the mineralization of organic materials, so that these nutrients are available to plants. The integration of this explanation can be studied in the Ecosystem material on the nutrient cycle and the role of decomposers.



Figure 13. Compost Fertilizer

CONCLUSION

Based on the results of the exploration conducted with a number of sources, it can be concluded that local wisdom in Pariaman City is related to manners, norms, religion, culture, social, and health. This study has explained the results of the exploration of local wisdom in Pariaman City in the fields of environmental biology, food and health, reproduction, and applications that can be integrated into Biology learning as a contextual approach. This finding confirms that various local cultural practices in the four fields can be introduced to students through Biology learning. This is expected to make it easier for students to understand the material so that learning becomes meaningful. As the next generation of the nation, we should explore the local wisdom that exists in our respective residential areas. Exploring local wisdom is a form of gratitude for God's creation and fosters a sense of pride that many local wisdoms are unique and have been applied since ancient times.

In addition, future research should focus on identifying effective strategies for integrating local wisdom into classroom practices, particularly in diverse educational settings. Further studies may also investigate the impact of such integration on students' scientific literacy, cultural awareness, and learning outcomes. By expanding on these areas, subsequent research can provide deeper insights into the role of local wisdom in shaping meaningful and sustainable Biology education.

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