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## Marshallese Medicines

Before the introduction of western medicine in the Marshall Islands, natives of the islands were knowledgeable about how to use available natural resources (plants) from the land to produce medicines to treat their sick. However, today the knowledge is not being practiced as much as it was many years before western medicines were introduced to the islanders. The knowledge of traditional medicines is very significant to Marshallese since it identifies who they are culturally. In our daily lives, health complications can occur anytime and when that happens, sometimes the nearest hospital is hundreds of miles away and transportation is not immediately available or supplies of medicines are inadequate, so what better solution is available at that point in time? Of course, the answer is local medicines.

Although some knowledge on traditional medicine has been passed down from generation to generation, some of it may have lost forever because some of the natives who had the knowledge have passed away without sharing the knowledge because they did not have anyone to share the knowledge with or they chose not to.

Importantly, a program was started a few years ago to bring together people with some knowledge about traditional medicine to share their knowledge. Through this program, Marshallese names for illnesses and traditional remedies were recorded, and a number of plants used to make traditional medicines were identified. All of the information was collected, compiled, and put in writing.

This paper, “Utilization of Plants Such As *Atat, Nin, Kino, Konnat, Kiden, Markubwebwe, Keinabu, Perilijman, Utilomar, and Madiko* To Make Traditional Medicines To Treat Various

Types of Medical Complications” shows some of the mathematics involved in Marshallese traditional medicine such as time, enumeration, calculation, pattern, and measurement.

First, using remedies from the *utilomar* tree to treat wound displays patterning in time, temperature and measurement. For examples, while preparing the remedy, there is a pattern to follow; “First you must trace the outline of your hand on the bark of the *utilomar* tree. After that, take scrapings of the bark from inside the outline of your hand. Next, pound the scrapings well and place them in an “O” (a material in the shape of an “O” made out of *inpel*). According to the Marshallese dictionary, “*Inpel* is a coconut cloth” (Takaji Abo, Byron W. Bender, Alfred Capelle, Tony DeBrum, 1976). Then, squeeze the juice into a coconut shell and place it in the sun to warm. Finally, apply this directly onto the wound” (Taafaki, Kabua, Thaman 2006, p.227). Moreover, the time from the first step in preparing the remedy to the final application of the remedy reflects a timeline and measurement. Before applying the remedy onto a wound, it must reach certain degree of warmth. Finally, the amount of the remedy is measured by using the palm of your hand.

Furthermore, using a *nin* tree as a blood coagulant reveals pattern, measurement, and addition. For example, the preparation of the remedy from the tree involves pattern; “Select a small *Nin* tree. Pull it out of the ground and cut off the roots. Wash the roots carefully and grate. Mix the roots with coconut oil and apply this directly to the wound” (Taafaki, Kabua, Thaman 2006, p.194). Then to produce the right remedy, one must pick a tree that is the right size (small). Finally, mixing the ingredients (roots and coconut) involved addition.

Moreover, a remedy from an *atat* to treat diarrhea presents some forms of math such as sequence, addition, enumeration, counting, and measurement. For instance, the preparation

of the remedy until the actual treatment of diarrhea implicates a sequence; “Combine 12 green leaves and 12 yellow leaves with water from a mature (brown) coconut. Next, add half a cup of salt water. Finally drink only during an attack of diarrhea” (Taafaki, Kabua, Thaman 2006 p. 77). The combination of ingredients mixed together implies addition, while the particular number of green leaves and the number of yellow leaves to be combined signifies that counting is required. Then, the amount of water from the coconut and the amount of salt water in a cup point to measurement.

In addition, using *kiden* to treat diarrhea conveys mathematical aspect such as pattern, measurement, and addition. For example, the preparation of the remedy from *kiden* describes a pattern; “Take 6 young leaves and pound them and put in a clean cloth. Fill a glass of water and squeeze the mixture into the water and drink it” (Taafaki, Kabua, Thaman 2006, p. 119). Next, pounding the leaves together and adding the juice with water shows addition. Then, to use a glass as a container of the remedy discloses measurement.

Obtaining a remedy for asthma from a *perelijiman* also involves mathematic aspects such as pattern, measurement, steps and time. For example, when making the remedy, you have to follow certain steps; “Pull a full tuft of *perelijiman* and clean the grass and roots carefully in clean water, removing all soil, dead roots and leaves. Pound the plant, including the roots. Make an ‘o’ and squeeze the juice into one cup of water. Drink 1 cup per day for 3 to 6 days” (Taafaki, Kabua, Thaman 2006, p. 204). Moreover, the administering of the doses requires a pattern by drinking 1 cup per day for 3 to 6 days. Then, the amount per dose is measured in a cup. Finally, the duration (time) of doses taken is 3 to 6 days.

To acquire a remedy from a banana plant to treat coughing reflects certain forms of math such as sequence, fraction and time. To make the remedy, you have to follow a sequence; “Select one banana plant. Cut it in half by cutting off the top. Next, scrape the exposed inside part of the half of the plant still in the ground. Let it stand for half an hour until water or sap collects in the scraped out hollow. Finally, give this to the patient to drink as long as required” (Taafaki, Kabua, Thaman 2006, p.207). Cutting the plant in half involves fractions while letting part of the plant standing until filled with water and the required time to drink the remedy suggests time.

Then, using *kiden* tree to treat fish poisoning involves various mathematical circumstances such as measurement, steps, and pattern. For example, to prepare the remedy, follow these steps; “Measure a one-palm size area on the bark of a Kiden tree and remove the outer bark. Scrape the inner bark of the tree and use this to make an ‘o’. Squeeze the ‘o’ to extract the juice into a cup of water and drink. Take once a day for 3 days” (Taafaki, Kabua, Thaman 2006, p. 119). Furthermore, using the palm of the hand to produce the right amount of the remedy involves measurement. Moreover, a pattern (take once a day for 3 days) is involved in the consumption.

On the other hand, to make a remedy from a *nin* tree to treat poisoning from eating a fish involves some types of math such as pattern, counting, measurement, and steps. For instance, in the preparation of the remedy you should follow these steps; “Take one large nin root. Clean, scrape, pound, and put into an ‘o’. Take a green coconut that has grown on a bunch that has 3, 6, or 12 nuts. Cut off the top of the coconut and squeeze the ‘o’ into the coconut. Give this drink in unlimited amounts to the affected person” (Taafaki, Kabua, Thaman 2006, p.

195). Next, the selection of an ingredient (green coconut) shows a pattern (take one green coconut grown on a bunch that has 3, 6, or 12 nuts). Furthermore, to make a correct selection from each nut on a bunch requires counting.

While using a *nin* tree and a *kino* tree to treat nausea illustrates few types of math such as steps, enumeration, addition, and time. For instance, during the process of preparing the remedy some steps must be followed; “Pick 3 young nin with 3 flowers growing out of the fruit, 3 young single leaves that are facing the east, and 6 small young Kino - 3 yellow and 3 green - that are facing towards the east. Each young Kino should have only a single frond or leaf. Pound together and put into an ‘o’, rub all over the body and let the patient inhale the ‘o’. Use one ‘o’ per day for 3 to 6 days” (Taafaki, Kabua, Thaman 2006, p. 196). The number of each ingredient reflects counting. Additionally, since the ingredients of the remedy are a combination of different types, they must be sorted out (enumerated) to have the right number necessary. Finally, you can drink the remedy 3 to 6 days describes timeline.

Then, to prepare a remedy from a *kainabu* plant to treat high blood pressure reveals some mathematical processes such as counting, steps, and time. For example, to begin the process of making the remedy, you must do the following; “Collect 3 yellow leaves, wash and boil them in a pot of water for 30 minutes. Drink throughout the day and use it for as long as required” (Taafaki, Kabua, Thaman 2006, p.114). Next, the number of leaves (3) indicates that counting is necessary. Finally, the boiling of the water shows time (30 minutes).

In the preparation of a remedy to treat diabetes requires different ingredients and displays certain mathematical processes such as enumeration, time, steps, and pattern. For example, first you have to do the following steps; “Collect 6 kalenin (Nin fruit) and 6 leaf buds

from a Kiden tree. Add those to 6 green and 6 yellow leaves from a Kone plus 6 leaf buds from a Kaar. Wash them well and boil in water for 15 minutes. Use a fresh mixture each day for 3 days. After three days, rest for 1 week, and then resume with another 3 days of treatment. Continue as needed” (Taafaki, Kabua, Thaman 2006, p. 194). Next, the ingredients are sorted out (enumeration). Then, boil the remedy for 15 minutes (time). Finally, the remedy is taken each day for three days, rest 1 week, and resume with another 3 days (pattern).

Finally, the preparation for the treatment for fungus and ringworm using a remedy from *keinabu* displays some mathematical idea such as steps and time. For instance, to begin preparing the remedy you must first; “Pick a green Keinabu fruit. Cut it in half into the ashes from an um (underground oven). Apply the Keinabu half to the infected area, rubbing it vigorously over the skin infections. Use as needed” (Taafaki, Kabua, Thaman 2006, p. 114). Finally apply the remedy as long as needed (time).

In conclusion, the knowledge of which medicines to use for certain types of illnesses, how to prepare it, from which plant the medicine is gathered from, shows ways in which mathematical knowledge can be extracted from traditional medicine. The knowledge about local medicines has been with the Marshallese long before the outsiders came to the Marshall Islands. Sadly, some of this knowledge may be lost forever. Fortunately, some of it is still being used until now because those who had the knowledge were willing to pass it down from generation to generation. Although today it is hard to find and gather information from people who are knowledgeable about local medicines, it is essential to seek further information about any local medicines that may yet to be uncovered. Also, further investigations may include why certain medicinal ingredients are in odd numbers or in even numbers.

## BIBLIOGRAPHY

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