

MAYAN MEDICINE: RITUALS AND PLANT USE BY MAYAN AH-MEN

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# MAYAN MEDICINE: RITUALS AND PLANT USE BY MAYAN AH-MEN

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Mayan civilization is a great example of a culture that was able to live off of the land and thrive using the resources around them. This paper looks at *ah-men* healers in Classic Mayan societies. It examines the plants and rituals used when curing illnesses and how we can observe this in the archaeological record. Classic Mayan ideology is also looked at in regards to its connection to *ah-men* and medicine, looking at ah-men's position in society due to the knowledge that they possessed. This paper also examines modern Mayans today and the ancient healing techniques that they practice. With this information, looking at what seemed to work and not work for curing different illnesses in Classic Mayan societies, modern medicine may become more natural, using plants and other resources available to cure illnesses.

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## INTRODUCTION

The Mayan culture was a strong and prosperous one during the Classical Period. Part of this can be attributed to the works of their *ah-men*, or doctors/physicians. Mayan were able to take advantage of a vast amount of wild resources due to their proximity to the rain forest. For this reason, Mayan medicine would have had a great advantage to that in other parts of the world, because there are so many plants available to them. According to Angela M.H. Schuster in *On the Healers Path*, in 1566, Diego De Landa, in *the Relación de las Cosas de Yucatán* (2001:1) stated that “There is in this land a great quantity of medicinal plants of various properties; and if there were any person here who possessed a knowledge of them, it would be most useful and effective, for there is no disease to which the native Indians do not apply the plants.” Holding that sort of knowledge was only part of what made *ah-men* important members in Mayan society; not only did they concern themselves with the physical making and administering of medicines, but also with the spiritual reasons they believed caused the illness in the first place. According to a medical doctor of Ukraine, Lev G. Fedyniak in *Medicine of the Ancient Maya* (2006), the Maya believed that the body and soul were one, just as there was no separation between the spiritual world and the physical one. With this idea, it means that spirits are all around who can help with healing and medicine. This is where their ideology or belief systems come into play. This study looks at *ah-mans'* place in Classical Mayan society in regards to ideology and their knowledge of medical plants. Modern Mayan medicine and what we can conclude from it today with new scientific studies done on the different plants used is looked at as well.

## METHODOLOGY

I have looked at their ideology and belief systems and the plants and other resources available to them. By examining these with the methods *ah-men* used to cure different ailments, as well as the archaeology done at various Mayan sites, I explore the importance of the *ah-men* in Mayan society, both through their spiritual guidance as well as their knowledge of native plants. By examining the incantations and plants *ah-men* used it can be determined that there was true medical value in the plants that they were using; something people can learn from in our pill riddled world today. At sites like Copán and Tikal I looked for things that would show me the importance of *ah-men* in society as well as their ideology. This includes artifacts such as ceremonial knives or vessels that show signs of use in different ceremonial activities like bloodletting and human sacrifice for the gods, indicating the important connection between ideology and the human body. Ritualistic artifacts such as awls, needles, perforators and pins were, as well as censers, *candeleros*, and figurines that represent Mayan ideology or show indications of medical practices performed in a ceremonial way. I also looked at different published works that deal with the medical practices ancient Mayans used. Traditional medical practices that Mayans still use today will be examined as well. Because the forest in that area today is much the same as it was 1,500 years ago, many of the same diseases and plants will still be present. According to William R. Coe in *Tikal, a Handbook of the Ancient Maya ruins: With a Guide Map* (1967:10), this can be seen by the presence of certain heron depicted in classic Mayan art, that are still residents today, as well as the use of certain wood from the zapote and logweed trees in the lintels across doorways of the ancient city of Tikal's buildings. By comparing these ancient practices to medicines used today, as well as the different qualities in

the plants used that may have helped with symptoms, it can be seen if *ah-men* actually possessed powerful medicinal knowledge or only created a placebo effect for their patients.

## **BACKGROUND**

Mayans rose to prominence in the Classical Period around A.D. 250 and did not decline until around A.D. 900 or the post Classic Period. They lived in the swampy lowlands of Central America. According to Francisco Guerra in *Maya Medicine* (1964:32), Mayans inhabited some 200,000 square miles of land, encompassing areas in southern Mexico, Guatemala, western Honduras, El Salvador and northern Belize. Mayan territory incorporated three different ecosystems, the Guatemalan highlands, the Central area of Petén and the limestone lowlands of Yucatan, as shown in Figure 1. This rich diversity of land would have allowed for a large variety of diseases to flourish. The complex tropical ecosystem provides for an ideal environment that supports many parasitic and infectious organisms (Santley 1986: 140). However it would also have provided the Mayans with a multitude of plants to experiment with, in order to make different medicines to cure or relieve the symptoms of these diseases. *Ah-men* were the doctors or physicians in their society. They were responsible for keeping life in balance. If an illness took hold of a city, it was because the world was out of balance and the gods needed to be appeased in some way and it was the job of the *ah-men* to accomplish this.

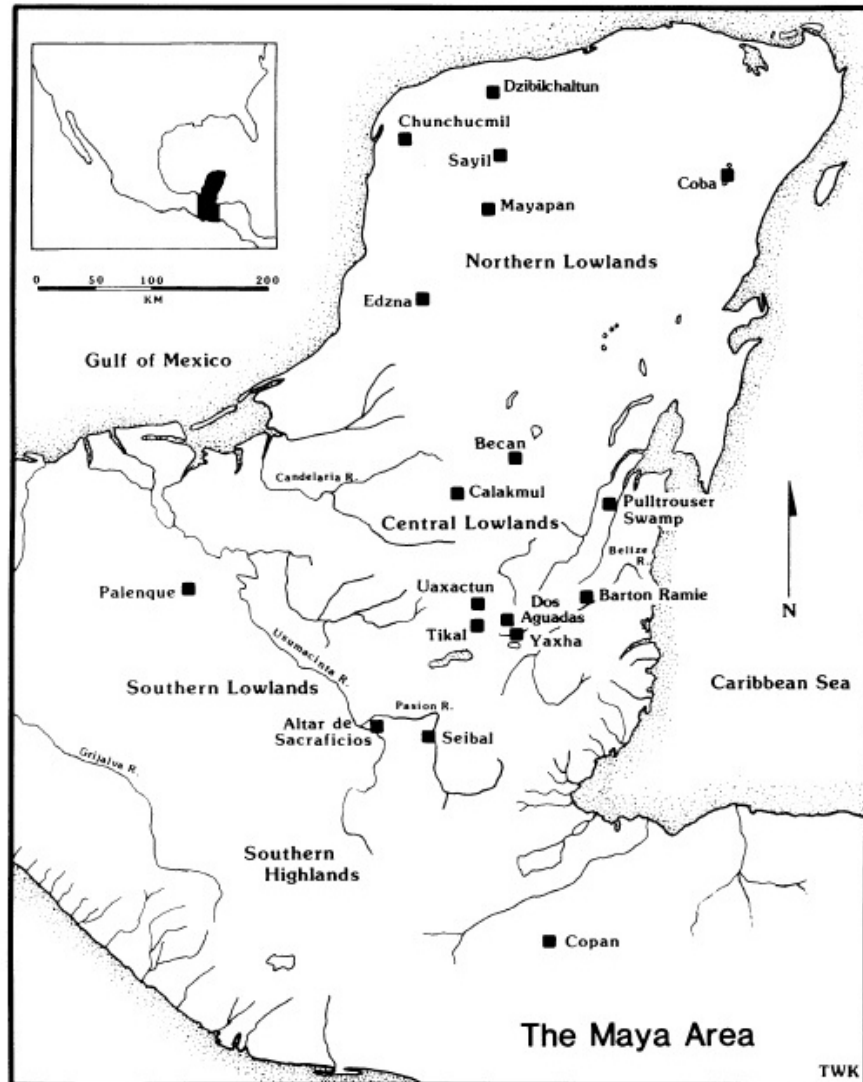


Figure 1. The area in which the Classic Maya lived (Santley 1986:124).

They studied astronomy and mathematics, creating a calendar which not only stretched forward in time but backwards as well. According to Francisco Guerra in *Maya Medicine, ah-men* (1964:35-36) had to constantly keep track of nature because nature and religion were connected in their eyes. Studying astronomy was one of the ways that they did this, thus enabling them to create a very accurate calendar. It consisted of twenty days or *Kin* in a month or *Uinal*. There were then eighteen months in a year or *Tun*, and each year ended with five unlucky days called



*Uayeb*, completing their three hundred and sixty five day long year. This was all in order to predict events and give the best advice on things such as when crops should be planted and harvested and when religious ceremonies should take place. Mayans also created a hieroglyphic writing system, written in books and carved stone, mainly telling of kings and the important events of his life as well as expressing pieces of their views and religion. Guerra (1964:37) also states that most of the Mayan books or *Codices* were made from inner tree bark fibers that were softened and glued together. They then had a smooth white finish put on them so that the scribe could paint the hieroglyphics on. Most of these were destroyed with the invasion of the Spanish, due to their religious content.

### **IDEOLOGY/BELIEFS**

Spirituality played a huge role in *ah-men*'s work. Schuster states that *ah-men*, literally meaning "he or she who knows" were the only ones equipped with the "curative properties of the rain forest and the spiritual tools needed to use it." They were the only people with the power, experience and ability to deal with not only the physical ailments, but the spiritual ones as well (Schuster 2001: 12). *Ah-men* were responsible for keeping a balance in life with nature and the spirits. According to Fedyniak (2006:1), Mayans believed in the idea of *ch'ulel* or life-force. It is everywhere and everything; mountains, animals, plants, buildings and people for example, are all connected in this divine force. If one thing is off or wrong, it throws off everything else in the universe. It is the *ah-men*'s job to keep this in balance. Schuster (2001:1) tells of how diseases were thought of as semi embodied beings that *ah-men* could control or ordered about. Also how *ah-men* would use small, translucent, glistening stones called a *sastun* (*sas* meaning "light" or

“mirror” and *tun* meaning “stone”) to communicate with the spirits. They gazed into their *sastun* and crossed over the divide into the spirit world. Then the spirits would tell the *ah-man* what the illness was and what plants to use to cure them. *Sastun*’s were special, given to *ah-men* by the spirit world; taking years, if ever to get one.

## MEDICINAL PLANTS

Mayans were able to thrive for so long due partly to *ah-men*’s knowledge and use of the plants around them. Fedyniak (2006) tells of how many Mayan *ah-men* or healers acquired a special connection to plants. They talked with the plants and developed special bonds with some plants, which they then relied on more frequently. Schuster (2001:1) states that many times they used the color of plants, their flowers, or fruit as a way of knowing its healing properties. Often red plants were used to treat blood disorders, rashes and burns because they too are red. Blue plants were used to make sedatives in order to treat conditions of the nervous system. Yellow plants were used for infections and ailments of the liver and spleen, because yellow is the color of bile and pus. White plants were seen as a signal for death, so they were avoided because they were oftentimes poisonous. Hot and cold is also a key concept in healing and choosing what plants to use. Fedyniak (2006) explains how many healers believe that a lot of sickness is due to temperature. For example, the body might experience a shock if it receives very hot food and a cold drink, causing gastrointestinal problems. The *ah-man* would treat this by using the opposite kind of plant. If the person was suffering from a fever, diarrhea or vomiting for example, they would be given cold plants or food. An example of this in modern or historic Mayan cultures would be cheese. On the other hand if the person was suffering from a cold illness such as

constipation, cramps or paralysis, they would be given hot foods such as garlic, pepper, ginger or onions.

### **Modern Mayans**

A study done of the plants used by modern Maya medicine men in the southeastern Yucatan communities of Chikindzonot, Ekpetz, and Xcocmil shows that the majority of healers today obtained their knowledge from older relatives or from other well trained, experienced *ah-men* (Ankli 1999:560,562). Like their Classic Mayan ancestors, medicinal plants were sometimes chosen based on hot and cold as seen in Table 1 (Ankli 1999:565). As Table 1 indicates, it is not a completely unanimous thought process, with some conditions more agreed upon than others. For example it is highly agreed among 96% of healers that dysentery is a "hot" illness due to the blood found in the patients stool, therefore the patients require a "cold" remedy. However respiratory illnesses are split almost equally when it comes to using "hot" or "cold" treatments. The only condition completely agreed upon is treating venomous bites with "cold" plants because it is a "hot" condition (Ankli 1999:565). Modern Mayan healers still often choose medicinal plants based on their appearance, taste or smell as well. For example, if labor needed to be sped up or if the placenta still needed to be ejected from the body, the woman might be given the Bignoniaceae fruit (*Godmania aesculifolia*) because it resembles the umbilical cord (Ankli 1999: 562-563). Table 2 shows the percents of which different smells and taste are considered when choosing a plant for certain illnesses. As seen in Table 2, often sweet plants and/or plants with a strong odor are chosen to treat reparatory illnesses. Skin conditions are many times treated with aromatic and/or bitter plants and bitter plants are often chosen to treat bites, especially by snakes (Ankli 1999: 563).

Table 1. Hot-Cold Classification of Medicinal Plants in Groups of Uses  
(Adapted from Ankli 1999: Table II).

Group of use	Hot (%)	Cold (%)	$n_{\text{tot}}$
Gastrointestinal disorders	65	45	101
Dysentery	4	96	27
Diarrhea	67	33	18
Vomiting	77	23	56
Dermatological conditions	29	71	35
Infection	4	96	24
Pimples	82	18	11
Women's medicine	88	12	25
Pain and fever	26	74	23
Respiratory illnesses	53	47	19
Bites of venomous animals	—	100	13

<sup>a</sup>Figures in italics:  $\geq 70\%$  of the total number of individual use reports; two responses: urological problems, Illnesses of the eyes, Other uses.

### Ritual of the Bacabs

*Ritual of the Bacabs* is a book explaining the medical incantations and plant use of the Yucatán Mayans. While most likely copied from a much older text, the Princeton codex of the *Ritual of the Bacabs* was probably written in the last half of the Eighteenth Century, discovered by Frederic J. Smith in the winter of 1914-15 in Yucatán (Roys 1965: vii). Some of the plants can not be recognized yet, but many others are very common.

Table 2. Classification of Medicinal Plants by Sensory Characteristics and Medicinal Applications (Ankil 1999: Table I).

Application <sup>a</sup>	Taste (%)						Smell (%)				<i>n</i> <sub>tot</sub>
	Bitter (%)	Astringent (%)	Sweet (%)	Tasteless (%)	Spicy (%)	Acid (%)	Aromatic (%)	Odorless (%)	Strong-smelling (%)	Bad-smelling (%)	
Gastrointestinal disorders	42	29	7	15	4	3	56	26	11	7	88
Dysentery	35	17	9	26	4	9	17	67	—	6	15
Diarrhea	33	50	13	4	—	—	65	24	6	6	17
Vomiting	58	19	—	15	8	—	61	16	16	7	56
Dermatological conditions	64	33	3	—	—	—	47	7	20	27	15
Women's medicine	29	—	—	57	14	—	55	40	—	5	20
Pain and fever	25	—	25	25	25	—	52	—	5	43	21
Respiratory illnesses	9	17	65	—	—	9	24	6	65	6	17
Bites by venomous animals	71	21	7	—	—	—	—	—	—	(1)	1

<sup>a</sup>Figures in italics  $\geq 30\%$ ,  $> 3$  responses.

<sup>b</sup>Urological problems *n*<sub>tot</sub> = 10; other uses *n*<sub>tot</sub> = 2; conditions of the eyes *n*<sub>tot</sub> = —.

For example, the Gumbolimbo tree, *Bursera simaruba*, pictured in Figure 2 is known to the Maya as *Chacah*. It is written in multiple incantations, to be applied internally or externally. It was prescribed to cure things like a running sore, a worm in the tooth, fire biting on wood, fevers, eruptions and seizers (Roys 1965: 116). The *ah-man* would perform a ritual and say things like

...Who is your tree? Who is the bush of the eruptions? Alas, it is to be created by the red *colonte*-woodpecker. This is to be created by him. The red *nix-che*-tree. This is the arrival of the red *chacah*-tree./ This is the arrival, alas, of the eruptions. They return because of their mother, because of their father, alas.

Who is the coolness of my hand, alas, when I arrive, oh, to break the great fierce (or poisonous?) one? I grasp the bowl of my red spring, my white spring, my black spring, when I cool its force (or pain). Oh, I grasp the bowl of my red cenote, my white cenote, my black cenote, when I cool its force (or pain). I grasp the bowl of my red forest-pond (*kaxek*), oh, my black forest-pond, when I cool its force (or pain)./ I grasp the bowl of my white hail, my black hail, when I cool its force, alas. Amen.

The *chacah* [*chacau*, chocolate?] is to be drunk with two peppers, a little honey, and a little tobacco-juice. It is to be drunk (Roys 1965: 36-37).



Figure 2. *Bursera simaruba* (Taylor 1996).

Looking at what we know today, the bark is actually antibacterial, anti-inflammatory and has antivenin actions. It can be used to reduce inflammation, relieve pain, stop bleeding, kill bacteria and heal wounds as well as reduce fevers and neutralize venom (Taylor 1996). This would have been a very useful plant for many illnesses.

Another plant used by the Mayans, shown in Figure 3 was *Byrsonima crassifolia*, commonly known as Nance and referred to as *Chi* by the Mayans. It was used on patients with yellow fever, dysentery, blood in their vomit, as well as tarantula seizures, tarantula eruption and asthma (Roys 1965: 117).

...The yellow *koch*-plant, the black *koch*,/ the *chiuoh-xiu*, are his arbor. Very yellow would be the fruit of the *put* ("papaya"). The *balam-kuch-ci* ("jaguar-vulture-agave"): This enters into the anus of tarantula-eruption, tarantula-seizure. Then he took the rough exterior of the *chi* ("nancen"). This is his arbor, where he took his force...(Roys 1965: 13-14).

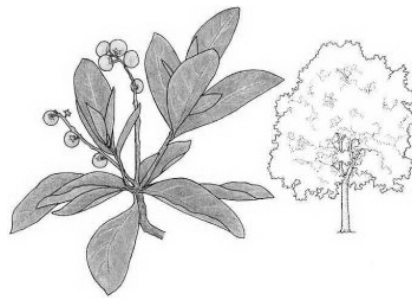


Figure 3. *Byrsonima crassifolia* (Ville de Montreal).

Through modern science, it has been discovered that the slow growing tree *Byrsonima crassifolia* or nance has profound antibacterial qualities. Containing the compounds Oleanolic acid,  $\beta$ -amyrin, quercetin, (-)-epicatechin,  $\beta$ -sytosterol and gallic acid which all reduce bacterial growth (Fausto Rivero-Cruz 2009:155-156).

The common weed pictured in Figure 4, *Chichibe* as the Mayans called it, or *Sida acuta* was used to treat asthma, phthisis, headaches, stomach problems, and skin diseases among other things. It is found in an "incantation for erotic seizures" (Roys 1965:117).

...Thirteen turns are his circuit in the hear of the sky, while he vigorously seeks the finds of the red *chichibe*-herb, the red *kutz* ("tobacco plant"), the white *kutz*, while I seize it. This is the symbol of the red *bacal-che-shrub*, the white *bacal-che*, the symbol of my steeping the sweetness (or wine?) from the *sac-nicte*-tree ("white plumeria"), the bed-covered of the *sabac-nicte*-tree ("purple plumeria"), the bed-cover of the *kan-mucuy-che*, the covering of its bed./ So that, how? with

the juice of the *chichibe*-herb and the juice of the *sac-nicte*-tree I steeped it for him to drink...(Roys 1965: 11-12).



Figure 4. *Sida acuta* (Royal Museum for Central Africa).

Modern laboratory work shows that it contains antimicrobial properties, as well as many Alkaloids that displayed antibacterial activities (Karou 2007: 2955).

*Scirpus validus* pictured in Figure 5, or Halal as the Mayans called it is a bulrush. These were used not only to make arrows but also to help patients with hiccups, fainting, dysentery, phthisis and the retention of urine (Roys 1965: 118-119).

...Then it was born; it progressed; it turns back, the red extractor, the red joiner, to be slapped by the heavenly fan, by the heavenly staff. He would fall to the east sea/ The edge of the sand would burn; the seashore would burn; the source would burn;/ the spring would burn; the *puhi*-rush would burn; the water-lily (*nab*) would burn; the reed (*halal*) would burn. The filling (or stuffing) would cease, when the force of the fire (or eruption) occurs. Bound is the jewel (*tun*) of the fire, red-budding, red-flowering fire...(Roys 1965: 39).



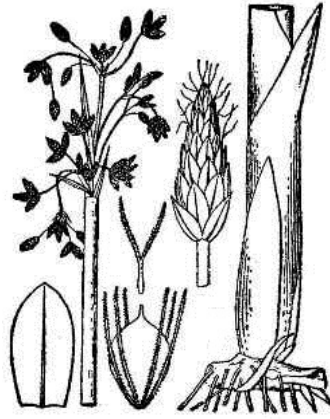


Figure 5. *Scirpus validus* (Adapted from Faucon 2005).

They were right on the mark because current technology has shown that the roots help to increase the rate of urination as well as contracts soft body tissue, so it works well to stop bleeding. The stem pith also stops blood flow, but in the blood vessels themselves (Vahl 2012).

As the Mayans called it *Dzulub-tok* seen in Figure 6, *Bauhinia divaricata* was used to treat fevers, pleurisy, a swollen head or neck and dysentery (Roys 1965:118).

...Who is his tree? The red *tok-aban* ("flint-bush"), the *dzulub-tok* ("festooned-" or "arbor-flint"). Ye four gods, ye four Bacabs! Four by yourselves, gods./

I Ahau would be its day, ye four gods, ye four Baca s. Shortly ago I received its force. Four alone. My red Bacab. Four gods are ye, four Bacabs.

Shortly ago I stood erect to suck hard, to receive its force. How? Behold, I stand erect to receive the force of the red *chim-tok* ("flint-capsule-tree").

Shortly ago I received the force of the white *dzulub-tok*-shrub/ Ye gods, ye Bacabs!/(Roys 1965: 62).



Figure 6. *Bauhinia divaricata* (Indigenous Medicinal Plants of Mexico 2009).

Modern experiments done on mice have shown a strong hypoglycemic effect (Menezes 2007:11). It may not have helped with some of the things that it was used for such as fevers or pleurisy but it definitely could have caused a positive effect in some patients with a swollen neck or head. When the body's insulin levels are too high it can cause symptoms such as low blood sugar, fatigue, depression, water retention and an increase in triglycerides which is often caused by high carbohydrate rich diets such as the maize rich diet the Mayans were consuming (Healing Daily 2002). Their diet may have caused many people to have metabolic syndrome, where the body produces too much insulin. The strong hypoglycemic effects of *Bauhinia divaricata* may have helped to stabilize this for them.

*Capsicum annuum*, more commonly known as bell pepper, cayenne pepper, parika or red pepper (EBSCO 2011: 1), or as the Mayans knew it, *ic*, is pictured in Figure 7. It was used to treat many things including blistering, phthisis, skin eruptions, blood found in urine, feces, or vomit, as well as delays in childbearing (Roys 1965: 119, quoted using same format).

Kanpedzkin (*wasp?*) on (*or in?*) the head of a man  
 The yellow *dzuto* (fl.) is to be heated with four peppers (*ic*) and drunk.  
 I Ahau, 4 Ahau, during his birth, while he was being created!  
 Snake (*or shoot?*) of creation, snake of darkness!

Who was his creator? Who was his darkness? He created him, did Kin Chac Ahau, Colop-u-uich-kin, Colop-u-uich-akab ("snatcher-of-the-eye-of-the-sun,...-of-darkness"), in the heart of the sky, in the heart of Metnal, during his birth, during his creation... (Roys 1965:46).



Figure 7. *Capsicum annuum* (Adapted from Noble 2013).

According to EBSCO (2011:1), when the human body is injured internally, a chemical release of substance P occurs. When *Capsicum annuum* comes in contact with tissue, it causes the body to believe it has been injured, tricking it to release substance P. This is why some peppers cause a burning sensation when eaten. When this occurs regularly, that area of the body becomes depleted of substance P. With less substance P the area is less sensitive to pain. Creams like Zostrix contain capsaicin just for that very reason. These types of cream are used to treat things like peripheral neuropathy, back pain, hernia repair or cancer surgery as well as osteoarthritis. It can also relieve itchy skin, psoriasis and nerve pain due to things like HIV and diabetes as well as pain from having the shingles. It has even been shown to help with cluster headaches when put in the nose (EBSCO 2011: 2-3).

Another example is shown in Figure 8, the tree *Hibiscus tiliaceus* or *hol* as the Mayans called it, was used for treating a worm in the tooth as well as what is believed to be a wasp, *kanpedzkin*, at the head of a man.

...Shortly ago, how? did you trim to its heart the red *chulul*-tree, the *tuncuy*-tree,/ the *chac-tok*-tree, the red *ek-hub* [*ek-huleb*?], the red *kanpoc* [*kanpocolche*?], the red *ix malau*.

You, then, how? Take the heart of the food. What gave pain? The red needle. What is the symbol of the saliva of your mouth? The white *hol*-tree, the red *hol*...(Roys, 1965: 55).



Figure 8. *Hibiscus tiliaceus* (Altered from Thomas, 2006).

Tests conducted on Swiss albino mice show that *Hibiscus tiliaceus* contains methanol extract that acts like an antidepressant (Vanzella 2012:4). It is unclear to what kind of illness “worm in the tooth” and “wasp at the head of a man” is referring, however assuming it means a toothache and a headache, an antidepressant would not be very beneficial for those specific patients.

However making tea using an extract of the flower has been shown to lower blood pressure in modern studies and lowering blood pressure may indeed have helped with a headache. It also contains Vitamin C which may have helped to prevent infection in the mouth that could have led to a toothache (McKay 2010).

Duckweed or *Lemna minor* was used to cool the patient when an eruption occurred with a fever. Pictured in Figure 9, the Maya knew it as *Ixima-ha* (Roys 1965:120).

The coolness of my foot, the coolness of my hand, when I cooled the eruption!  
Five are my white hail-stones, my black hailstones, [my] yellow hail-stones.  
Then I cooled the eruption. Thirteen are the layers of my red dressing, my white dressing, [my] yellow dressing, when I received the force of the eruption. A black fan was my symbol, when I received the force of the eruption./ With me comes the white[aquatic *ixim-ha*-plant, when I received the force of the eruption. With me comes the white *nab*-water-lily, when I received the force of the eruption. Shortly ago I applied [to it] the coolness of my foot, the coolness of my hand. Amen (Roys 1965: 39-40).

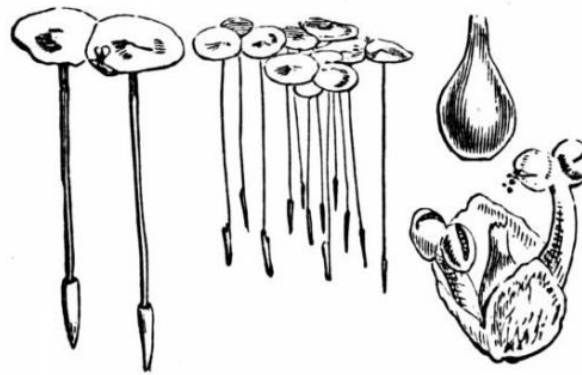


Figure 9. *Lemna minor* (Adapted from Fitch 1924:1).

We now know that *Lemna minor* can be used to treat the common cold, measles, swelling of the hands or feet from fluid buildup, itchy skin, and urination problems. It also works as an astringent and helps to reduce fevers (L. 2012). These ailments were exactly what the *ah-men* were treating with duckweed. The patients would have seen a positive effect.

Not all plants used by the Mayans had medical value. According to Roys, Achira, more commonly known as Arrowroot or Indian Shot (*Canna edulis*), was used for spider bites and pain having to do with the nervous system (Roys 1965: 116-117). Although it may be a good source of starch, according to Ziarovsky this plant does not seem to have any medicinal value (Ziarovsky 2013).

Even though many of the plants used did have medicinal qualities, they were not always used correctly. It is very likely that there was a placebo effect going on for some of the time. The *ah-men* tried to create a hypnotic effect with their incantations, using similar sounding words or repeating words often; using puns and near puns as well to set a relaxing and drowsy atmosphere for the patient. This great trust in *ah-men* shows their importance in society (Roys 1965: xxi).

## ARCHAEOLOGY

Looking at the archaeology done in Classic Mayan cities, *ah-men's* importance in society can be seen. Much of the archaeology done in Classic Mayan cities shows malnutrition, which leads to the increased probability of contracting an illness. Iron deficiencies and diseases related to pathologies, although unclear on exactly which diseases they are, are also seen. These are observed in the mummified soft tissue, coprolites and skeletal remains excavated at various sites (Santley 1986: 139, 141-142). This malnutrition can partly be contributed to the population increase during the Classical period. Urban areas boomed with farmers, artisans, traders and religious specialists such as *ah-men*. Due to the population increase, societies were forced to rely mainly on maize, which is not extremely nutritious (Wright 1996: 148-149). This lack of nutrition and the resulting increase in illness would have made *ah-men* more important and valued. If someone was ill, they believed it was because the gods were mad or upset about something. *Ah-men*, being the only individuals capable of communicating with the spirit world were then expected cure that individual through ritual to appease the gods and wild plant

resources. As the middle man between the spirit world and the real world, *ah-men* would have been important for not only medical occasions but ceremonial ones as well.

## **Copán**

Botanical remains discovered at the Classic Mayan city of Copán in Honduras show that although mainly relying on maize, they were also eating things like bottle gourds, chayote, avocado, squash, beans, nance and coyol among other things (Webster 1999:31). This would imply that they would not then be malnourished from a diet of too much maize. However excavations done by Rebecca Storey in 1992 and 1997 as well as by Stephen Whittington in 1989 found that of approximately six hundred burials in both rural and urban areas show evidence of diseases due to a lack of nutrition, as well as a lowered fertility rate and increased mortality (Webster 1999:31). Some of these infectious diseases can be seen in the bone after death, demonstrated in Table 3. Infections can cause inflammation and tenderness to the bone, known as Periostitis. The body trying to repair itself causes a fibrous new bone to form a thin layer over the existing bone. You can tell if that person died from the infection because if cured, the fibrous new bone and the existing bone would eventually become incorporated into each other (Wright 1996: 167). In the archaeological record we can see that people did indeed survive some of these infectious diseases due to the presence of osteoblastic bone growth in affected areas (Wright 1996: 167). This could be a sign of *ah-men*'s success at healing through incantations and the use of medicinal plants.

Table 3. Frequency of Diaphyseal Periosteal Reactions in Adults in Mayan and Comparative Skeletal Series (Wright 1996: Table II).

Skeletal series	Femur		Tibia		Reference
	%	N	%	N	
Maya series					
Pasión (combined)	37.3	75	68.0	75	Wright, 1994
Tipu	—	—	8.4	704	Cohen <i>et al.</i> , 1994
Copán	43.5	46	55.3	38	Whittington, 1989
Comparative series					
Moundville, AL <sup>a</sup>	19.3	419	58.5	434	Powell, 1988
Gibson, IL <sup>a</sup>	60.0	45	84.4	32	Cook, 1976
Ledders, IL <sup>a</sup>	38.1	21	63.6	22	Cook, 1976
Ft. Ancient, OH	10.6	160	24.3	136	Perzigian <i>et al.</i> , 1984
Jomon, Japan	5.1	332	12.6	324	Suzuki, 1991
Medieval York, UK <sup>b</sup>	13.9	466	61.8	466	Grauer, 1993
Nubia, X-Group <sup>c</sup>	3.4	129	—	—	Armellagos, 1968

<sup>a</sup>Series in which treponematosiis has been diagnosed.

<sup>b</sup>Subadult data are included with adult statistics for these samples.

<sup>c</sup>Both tibial and femoral periostitis considered together.

## Spatial Distribution

In Copán Valley there are different settlement units made up of three or more structures surrounding a central courtyard. These units are known as Patios. When several of these Patios are clustered together they are considered a settlement or a group. Julia A. Hendon (1991: 897-900) examined three of these patios, Gr. 9N-8, Gr. 9M-22 and Gr. 9M-24 in the inner zone of Copán Valley, pictured in Figure 1. She looked at activity areas in these three settlements by examining the special distribution of buildings as well as the artifacts found near or in them. She found that in these three, ritual structures tended to vary in form and location as well as the distribution throughout each patio. The settlement Gr. 9N-8, pictured in Figure 11 is one of the largest, with approximately fifteen patios in it.



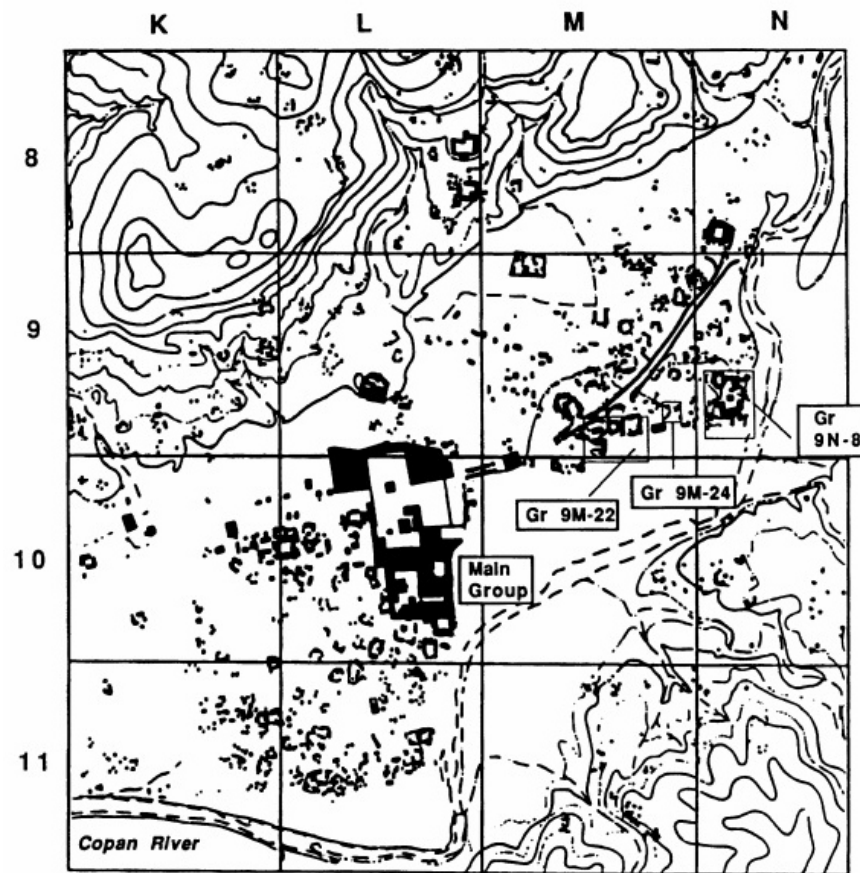


Figure 10. A portion of Copán Valley (Adapted from Hendon 1991: Figure 1).

This patio, with four out of the six ritual structures, contained the most of the three inner zone settlements Hendon examined, with zero in Gr. 9M-24 and one in each of the two patios in Gr. 9M-22. Inside of these ritual structures she found artifacts associated with ideology such as censers, *candeleros* and figurines. Since these are also found in many other areas, it is also important to note the majority of ritual structures had a small bench inside but did not contain burials, caches or middens behind the substructure (Hendon 1991: 903-904).

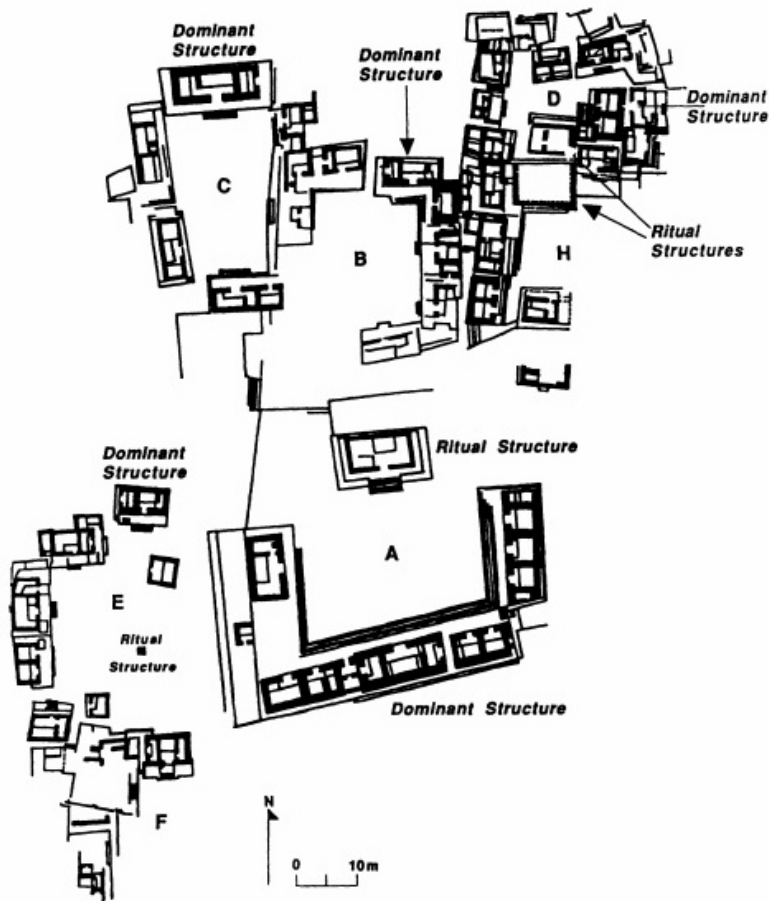


Figure 11. Gr. 9N-8 in the Copán Valley (Adapted from Hendon 1991: Figure 2).

Considering that the majority of patios have a ritual structure, and if not, then there is one close by that they could share, as well as the fact that many residential structures also contained ritualistic artifacts (Hendon 1991:911), it can be assumed that ideology was not only an important part of their society but an important part of their day to day lives. As a spiritual figure, *ah-men* then would have been valued as important members of society.

## Tikal

Temple I, located directly to the right of the Great Plaza in Figure 12 is the location of Burial 116. In this burial many intricately carved bones were discovered (Trik 1963:18). These bones were predicted to be priestly equipment for ceremonial purposes or ornamentation. Consisting of

awls, needles, perforators and pins, these could possibly be tools, however pottery and stone sculptures found illustrate them being used often in bloodletting ceremonies (Trik 1963:18). To my knowledge no residue analysis was ever done on these bone tools. With this test it would be possible to see if they were used in ceremonies such as bloodletting. At other sites such as Chichen Itzá, a Postclassic Mayan site, similar medical instruments were discovered. A large range of different sized knives, smaller ones for things like phlebotomy, mutilations, dental fillings and the extraction of foreign objects from a patient and larger ones for things like removing the heart from the chest. These knives found were made of flint, however there are drawings that show bones being used as well (Guerra 1964: 41). As seen in Figures 13, another sign that these intricately carved bones are ceremonial is that many of them show depictions of gods and priests.

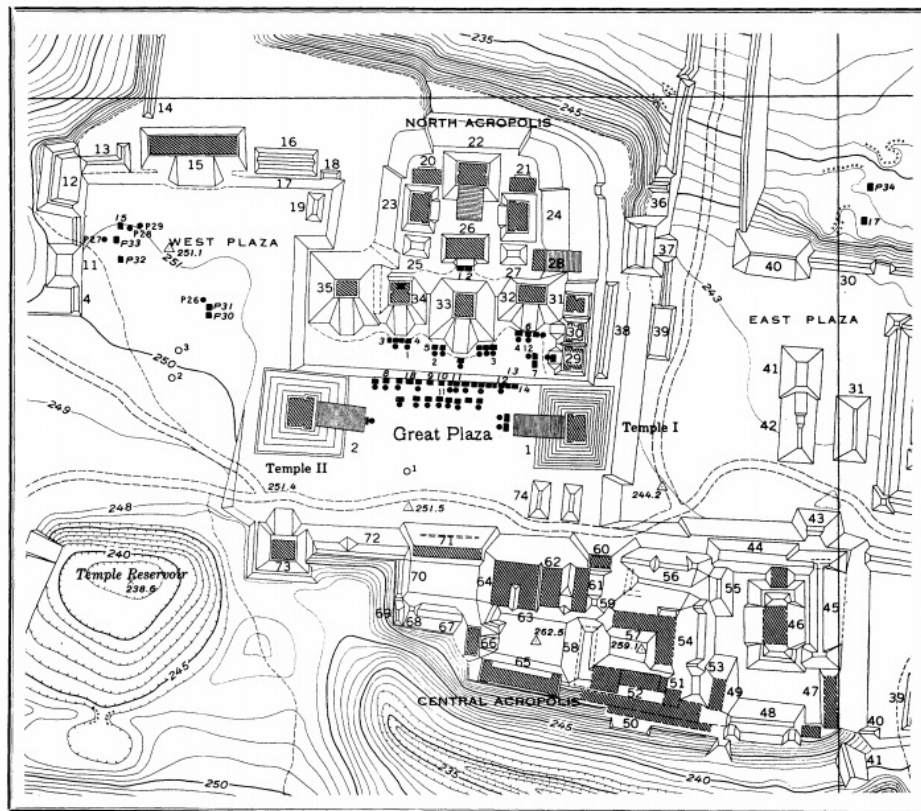


Figure 12. Tikal (Coe 1962:481).

The engravings shown in Figure 13 depict a canoe scene in which a deity is in charge of the canoe, with a serpent's head, three animal gods, one of which is Spider Monkey, and a gesturing priest (Trik 1963:13). To find this in a tomb implies that the gods are very important to the Maya, as well as the priests or *ah-men* who speak for them.



Figure 13. Carved bone in Burial 116 (Trik 1963: Figure 6).

## CONCLUSIONS

There is a large connection between Maya medicine and their ideology or belief system. For them the two were connected and could not be separated. Looking at the evidence of plants used as cures and the medical knowledge we now have today; it is clear that many of these plants actually did have healing qualities, this in turn making *ah-men* valuable members in society. There was also a strong trust in *ah-men's* abilities (Roys 1965: xxi), so there would have been a placebo effect on many patients because they believed that the *ah-man* had communicated with the spirits to find a way to cure them. More research needs to be done on the bones found in Classic Mayan sites in regards to cause of death, especially illness. There is some information collected about individuals who were sacrificed or victims of blunt force trauma from situations such as warfare, however very little information has been collected on other causes of death.

This however could prove difficult because very few illnesses can be seen in bones. With this information, *ah-men's* abilities could be examined. If there were many people dying from illnesses, it would indicate that *ah-men* were not doing a sufficient job of curing individuals. As looked at earlier, if the bones showed signs of an illness that was later healed, it could be an indicator that *ah-men* were doing a good job of finding useful plants to cure those illnesses. Although this was looked at briefly, much more information is needed to draw stronger conclusions as to *ah-men's* success in healing illnesses. *Ah-men* were able to learn vast amounts of knowledge through verbal teachings over the generations, each building on the previous with their own experimentations with different plants that the spirits encouraged them to try. This knowledge is still being used and passed on today in some modern Mayan communities. By examining this ancient knowledge of medicinal plants, and the effects it had on a population, insight can be gained and used to re-evaluate today's medical practices, making it more natural and healthy for patients.

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