



Herbs and Edible Plants of the Amazon Rainforest

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Introduction

The Amazon rainforest is pictured in children's books and movies as an immense growth of green trees and colorful flowers, spotted with Jaguars and monkeys. While this picture of the Amazon is largely recognized, there is an entire world hiding in the forest that is of unimaginable importance. The herbs and plants growing from the trees and shady areas below the forest canopy are of inestimable value to humankind. The people living in the rain forest depend on fruit and medicinal tree species that are currently being extracted by the timber industry. The timber industry is creating irreversible damage to the forest. A study in Peixe-Boi, in the Brazilian state of Pará, demonstrated that about 65% of native trees do not regenerate well after repeated cycles of slash and burn (Shanley et al. 2011). Deforestation affects the plants and trees in their ecological processes as well, creating even more detrimental effects than can be estimated by the loss of a few individuals. For example, the Brazilian nut tree cannot reproduce without specialized pollinators from the forest. When the loggers come in and take down the nut trees and leave just a few on the outside edge of the forest, the habitat for those pollinators is destroyed and so the trees left behind are unable to reproduce. There are many important species found in the forest whose bark, fruit, and exudates are used to treat human illnesses and feed people. These species are unique and cannot be substituted by man made drugs. In fact, many pharmaceutical drugs are derived from plants. If the species are lost before they can be studied fully and understood, the cure for diseases of today and the future may be lost forever.

Why plants are useful

Plants can be useful for many reasons, but most importantly as a source of nutrition and as medicinal herbs. A nutrient is a substance that is essential to the processes of life and growth. An herbal medicine contains chemicals that alter biological processes for therapeutic use (Spinella 2001). Nutrients can be edible flowers, fruits, and other parts of plants that people eat to avoid hunger and provide their bodies with proper amino acids and vitamins. Herbal Medicines are more commonly dried and ground and put into a tablet form or the herb can be boiled in hot water and the water then contains the active chemicals. The chemicals found in the herbs are quite a miracle on their own. Intricate ecosystems such as the Amazon rainforest consist of millions of plants all fighting for the same resources (sunlight, water, pollination) and avoiding the same predators (parasites, insects, animals). Over time, each individual species adapts to its unique circumstances in the competition of life. This competition is often what gives rise to the specialized chemical presence in the herbs. Plants over time developed three types of defense to competition: nutritional, physical, and chemical (Spinella 2001). The developed chemical defense is what humans utilize in the plants for medicinal purposes. The chemical defenses involve producing substances that strongly alter a predator's physiology. Predators adapted to these substances by developing tolerances and utilization of the chemicals, which is exactly what this paper is all about.

Types of Plants

There are four main types of plants that grow in the rainforest. Epiphytes are plants that have evolved to grow without contact with the forest floor. These plants live off of other plants.

While traversing the Amazon rainforest I noticed quite a few flowering plants sprouting out of

trees and off of stumps. These species are very interesting and vary greatly from orchids and cacti to ferns and mosses. Some of the epiphytes live almost in thin air, their roots catching the little amount of soil they need. Bromeliads can also be epiphytes, but they are different in the way that they have cup like structures where they collect rainwater and detritus. Small animals such as frogs and snails live in the bromeliads for the most vulnerable part of their lifetime as they are safe inside the plant (Kricher 1997). Palms are another type of plant that is very vulnerable due to their commercial value. Palms can be used to make baskets and necklaces as well as houses and other goods. Some palms have valuable oil that is full of Vitamin A and other nutrients. Vines are another type of plant that plays an important role in the forest as food and a highway for insects and animals to move throughout the forest. Vines have a long history in human use as food, medicine, hallucinogens, and poisons (Kricher 1997).

My Trip to the Amazon

I visited the city of Manaus, Brazil which is located in the heart of the Amazon rainforest. While I was there I had the opportunity to hike through the forest and observe the vegetation. I also visited a local market where there were numerous herbs and plants for sale. I asked my guide to translate what the packages contained and the claimed uses of the herbs. I learned that there are many ways to prepare herbs and plants and that many of the medicines used in the area were collected directly from the forest.

There were many packets of dried leaves that were meant to be boiled in water and then consumed. One of these was the leaf of the Parangaba which is said to be good for digestion, muscle pain, and blood circulation. The bark of the Mulateiro tree is said to have anesthetic and

anti-inflammatory properties and also helps to close cuts, calm asthma symptoms and decrease memory problems. The Cha verde- or “green tea” tree leaves are said to decrease chances of cancer, lower cholesterol, blood sugar, and reduce the occurrence of kidney stones. The leaves of the Pata-de-vaca- “foot of cow” bush is given to diabetics and also is good for keeping away parasites and killing negative bacteria. The package also noted “combate a urina solta” which my guide explained meant that it was good for menopausal women with bladder issues.

There were also many packets of grated seeds which could be mixed in food or put into tablets. The Genibre, or ginger was supposedly good to help with a sore throat or upset stomach. The packet of Catuaba claimed to increase energy and accelerate heart beat. The bark of the Unha de gato claimed to reduce risk of prostate cancer, internal infections, tumors, and liver pain. My guide also noted that it was good for people to take after a night of excessive alcoholic consumption. There was a packet of mixed herbs labeled “Emagrecedor 7 ervas” that was marketed as a combination of plants to help lose weight. The Guarana de Maués plant berries have a similar effect to that of red bull, the energy drink, it has 5% more caffeine than coffee. There were also dried pirarucu tongues for sale in case anyone wanted to grate their own seeds.

The next stand we visited had some packets as well, but they were selling mostly green, freshly cut plants and herbs. There were many flowers and seeds offered for sale as well. The Brazil nuts were quite larger than I thought they would be, and insanely tough. Each nut has 16 to 24 edible parts inside, only humans macaws and agoutis can eat them because they are so hard to open. The manioc tuber was also for sale, it is kind of like corn meal and very bitter. They offered it as a side at almost every restaurant we went to. There were aloe vera leaves that were

meant to be put in a bath and bathed in. There were many other green plants that people bathed in as well. The melon caetano was a little yellow flower that was supposed to help with allergies. The manjericao was meant to be mixed with food to give it flavor. The locals believed that eating it in your food would make you healthy. Crista de galo was an herb fed to elders to help with arthritis and muscle pains. The amor crescido was a conditioner made from plants to decrease hair loss. There were other items to buy as well like honey from the Jandira honey bee. My guide told me about how he had been stung once and the bee has a rounded stinger like a hook. The Hibiscus plant is used for weight loss, as well as to reduce liquid retention, and as a powerful antioxidant. Guarana keeps you awake and throughout my trip there was guarana soda offered almost everywhere as an energy drink. The “Chora nos meus pés” or “cry on my feet” was sap from a flower that is meant to be put on skin to keep bad spirits away. All of the above mentioned plants and their uses were read off of packets in the market and so may not be completely accurate or safe for use. Regardless of if the herbs can be scientifically proved to support the claims on the packages or not, it was so different to walk into an area where people will buy them off the shelf and use them at home. In America, these items would never be sold mainstream alongside fruits and fish as they were there.

Herbal plants of the Amazon

Ginger

Ginger is an underground stem of the *Zingiber officinale*. It is a tropical perennial that grows six to twelve inch stalks and dense, cone-like flowers at the end (Spinella 2001). The leaves are long and grass like and can be up to a foot long. The herb can be used to treat rhinitis, gingivitis,

toothache, painful menstruation, asthma, stroke, constipation, and diabetes (Mustafa et al. 1993). Ginger is generally used to calm the digestive system is widely used as a cooking spice. Ginger ale is a common drink made from carbonated water and ginger syrup. Steam distillation of the dried root produces ginger oil that can be used in beverages, candies and perfumes (Spinella 2001). There is evidence that ginger may also have antistress and antidepressant abilities in humans. Ginger is effective in treating motion sickness. Trials at ST. Bartholomew's Hospital in London in 1990 found the herb more effective than conventional medicines in relieving postoperative nausea (Chevallier 1996). Ginger also has anti inflammatory properties and helps blood circulate throughout the body. Since Ginger is regarded as generally safe by the Food and Drug Administration, adding reasonable amounts of the herb to your diet may benefit your overall health.

Cat's Claw

Cat's Claw gets its name from the inch long hooked thorns that look like cat's claws along the long woody vine. The hooks are to anchor the plant into trees and branches to climb toward sunlight. There are two closely related species, *Uncaria tomentosa* and *U. guaianensis*.

Indigenous people have used the bark and root to treat asthma, arthritis, rheumatism, urinary tract infections, inflammation and cancer (Johnson et al. 2012). The herb has also been used as a remedy for fevers, intestinal ailments, gonorrhoea, and as a form of birth control. The herb is most often used for its immune system stimulating qualities. In one study, either a placebo or 300 mg of cat's claw extract was given twice a day for a month to 23 men. They received a vaccination immunizing them against pneumonia. After six months, the group receiving the cat's claw maintained their immunity whereas the placebo had less immunity (measured by

antibody levels) (Johnson et al. 2012). Cat's claw is easily accessible in markets in and near the Amazon rainforest. Although the vine does well in disturbed area where abundant sunshine allows it to reproduce, it needs to climb to reach maturity. The vine takes ten years to mature, the diameter of the stem growing to four inches. Fresh, drinkable water is released when the vine is cut (Boon & Smith 2009). Cat's claw tea is commonly consumed. While cat's claw is relatively safe, it does cause side effects when taken when other medications are also being consumed regularly.

Jatoba

Jatoba is a tall tree that gets to be approximately forty meters high and two meters in diameter. The bark can grow up to three centimeters thick. The tree produces fruit about every other year, and some can produce 2,000 fruits each containing two to four seeds each (Shanley et al. 2011). The fruit can be eaten raw or used to make flour. The fruit supposedly helps keep the lungs healthy and functioning. Tea can be made from the bark. It is said that the tea can combat the common cold, diarrhea, bronchitis, cystitis, pulmonary congestion, worms, weakness, bladder infections and cramps, as well as to aid in digestion and to treat prostate cancer (Shanley et al. 2011). The tree produces a valuable sap that can be used as fuel, medicine and as a wood sealant. Resin is created when the sap comes in contact with oxygen. The resin can be chewed to alleviate gas and stomach pain. The leaves of the tree are also useful as they possess a chemical that kills fungi and repels ants and lizards (Shanley et al. 2011). While Jatoba is not toxic taken in small amounts, its bark looks very similar to other barks that are extremely toxic so extra care should be taken when dealing with identifying the tree.

Edible Plants of the Amazon

Piquia

The piquia tree, or *Caryocar villosum* produces large edible fruits. It can grow up to fifty meters high and two and a half meters wide. The fruits are irregularly oblong and are about eight centimeters by nine centimeters in size. The pulp can be boiled in salt water and used as a juice. The fruits fall off the tree when they are ripe and are then collected (Arkcoll et al 1986). The native people of the Amazon relied on these fruit as a main source of nutrition in the past. People living in the Amazon continue to consume them regularly today. The yellow pulp inside is fragrant and attracts many types of animals. The oil from the fruit is great for frying fish (Arkcoll et al 1986). The seeds of the fruit are the most nutritious part. The rind of the fruit can be used as a dye or to make soap. The piquiás depend on a nectar-eating bat, Thomas's nectar bat (*Lonchophylla thomasi*) for pollination. The trees must be nearby and flowering at the same time, with increasing deforestation the likelihood of this occurring and the trees being pollinated decreases greatly. The fruit is still used widely in the area as well as abroad, losing it to deforestation would have drastic effects.

Bacuri

The Bacuri fruit has tasty white pulp that gives a distinctive flavor to pudding, ice cream, juices, yogurts and more. The sticky yellow sap that oozes from the bark can be used as glue and can treat eczema, herpes and other skin conditions (Lopez et al. 2004). The oil from the tree is used in many soaps and is also used to heal cuts on animals. Bacuri trees (*Platonia insignis*) are only found about once in every three hectares of forest (Lopez et al. 2004). The tree has large shiny leaves and large flowers with pink petals. The fruits fall from the tree when they are ripe and are

collected by women and children very quickly. The fruit is hidden inside the thick green rind that must be smashed to free the pulp from inside. The fruit is high in Vitamin C and phosphorus (Shanley et al. 2011). The pulp and seeds are collected and separated. The wood of the tree is also very useful for making expensive furniture and boat building.

Cupuaçu

The Cupuaçu is a melon sized fruit that has a creamy white pulp. It is considered one of the most nutritionally beneficial superfruits ever. The fruit has a chocolate flavor to it and is loaded with antioxidants. The fruit contains high amounts of essential fatty acids, amino acids, phosphorus, fiber and vitamins B1, B2, B3, A and C (Lim 2012). The fruit helps regulate mood and increases energy. The fruit also stimulates the immune system and helps keep skin and hair healthy (Lim 2012). The pulp of the fruit is used in shampoo, conditioner, lotions, creams, and other skincare products. It can also be used to make juice, ice cream, smoothies, mousse, jellies, chocolate, and liquor. There is also evidence that the fruit has other effects such as lowering blood pressure, lowering cholesterol levels, improving brain functions, simulating skin rejuvenation, combating diabetes, and more (Lim 2012). These brown fuzzy fruits taste great and are good for the body.

Conclusion

Overall, it is clear that the herbal and edible plants of the Amazon have a lot to offer humans. Saving the Amazon rainforest is of utter importance especially due to the fact that it is home to so many unique and useful plants. The herbs and edible plants mentioned in this paper are just a few of thousands of identified plants that have been studied. There are countless more plants in

the forest that have yet to be identified and studied. As the plants continue to grow and adapt to changes over time, they create new species that we can use to combat disease and hunger. These species must not be given up for the short term profits of deforestation. The biodiversity of plant life in the forest is priceless. My tour of the Amazon was an amazing experience. From reading children's books to sliding down the clay filled trails of the forest, I have learned over and over about all the irreplaceable species of the Amazon. The herbs and fruits growing in the Amazon rain forest are of unimaginable value to mankind.

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