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TITLE: NOTES ON ECONOMIC PLANTS: *Acacia acatlensis*: an alimentary resource in Southwest Puebla and North of Guerrero, Mexico

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This note points out the alimentary use of buds of *Acacia acatlensis*, Mimosaceae, a Tropical Deciduous Forest tree. *Acacia acatlensis* buds known as borreguitos (little lambs) or yepaquilitl (the Nahuatl name for skunk quelites), develop at the beginning of the rainy season, and are used as part of the regular diet among the Nahuas of southwestern Puebla and northern Guerrero, Mexico.

Diet among rural populations often includes a wide spectrum of biological species. Some of these edible plants, in spite of the fact of having a high nutritional value, are not distributed worldwide but are known only regionally, i.e.,: amaranto (*Amaranthus* spp), quintoniles (*Brassica* spp), quelites (*Chenopodium* spp), guajes (*Leucaena* spp) (1-4). Other groups of American edible species are known only locally because they originated in distant or inaccessible locations, are grown in particular environmental conditions or are consumed in isolated communities with specific cultural, economical or political features. This note describes a native American edible plant that belongs to the "locally-known" group, and that has been scarcely reported in the scientific literature as food.

The study zone is located in the municipalities of Jolalpan, Southwest Puebla and Copalillo, North Guerrero (Fig. 1). The dominant vegetation in both zones is Tropical Deciduous Forest (5, 6), which occupies about 17% of Mexico's surface (7). Jolapan village is 820 m.a.s.l., its average temperature is 26°C, the average annual rainfall is 840 mm and the yearly dry season is 8 to 9 months long. Copalillo, in the Balsas river Basin, is 825 m.a.s.l., with an average annual rainfall of 800 mm. The population of both municipalities belong to the Nahuatl linguistic group, maintain a strong traditional culture and show a high rate of infant undernourishment (e.g., circa 70% for children between 3 and 5 years).

This study is part of a larger project on medical anthropology, ethnobotany and health organization, developed with the joint participation of regional peasant organizations. Peasants discussed in focal groups their use of local resources for health purposes, and medicinal plant workshops were held, which included botanical walks and the production of galenic remedies. Activities were conducted within a framework of reciprocity (9-10). After collecting ethnobotanical data and identifying the species, the nutrient composition of bud samples of *A. acatlensis* was determined in the Diagnosis Support Services Unit (Unidad de Servicios de Apoyo al Diagnóstico), of the Universidad Autónoma Metropolitana Xochimilco, using proximal chemical analysis.

Acacia acatlensis (Hersch 723) is recognized as an important alimentary resource in both municipalities. Buds and trees of *Acacia acatlensis*, Mimosaceae, are called "Borreguitos". These trees from Tropical Deciduous Forest are 3 to 6 m tall, and grow mostly within creeks. The plant is also known by its Nahuatl name Yepaquilitl or Yepaquihle, which means skunk quelites, called so because of the strong and peculiar smell of its flowers. Quilitl is a Nahuatl name used for edible vegetables and herbs.

Peasants consider that the still-unopen blossoms (Fig. 2) look like little brooms. The flowering season starts in May or June, and takes no longer than five or six weeks to end. An old woman said: "I have known borreguitos since I first opened my eyes. Borreguitos have been prepared since the time of my grandfather's grandfather". Branches are cut, and buds are removed from blossoms one by one. Buds should be harvested before they sprout according to traditional recipes.

Cooking procedures are similar in both areas. However, they differ slightly in some aspects:

a) In Jolalpan, Puebla, blossoms of *Acacia acatensis* are cut and chopped, or crumbled one by one; then buds are sliced, ground and mixed to get a compacted mass, and wrapped up with corn husks. A small portion of tequesquite should be added (this is a natural salt containing soda sesquicarbonate and sodium chloride, found at the bottom of salty lakes). Buds are dampened, sediment is removed and water is poured onto the flowers. Dry granular salt, needed to keep the buds green, is added to the mixture and rubbed on a wooden tray until foam is produced. Then tamalitos are made with leaves of totomoxtle (corn husks), put on fire on a clay griddle called a comal, and flipped continuously to avoid burning. When the totomoxtle turns black, tamales de borreguitos are ready.

b) In Copalillo, Guerrero, the tamales de borreguitos are eaten with beans, with chili sauce or with sliced chili upon them. Buds of *Acacia acatensis* are also boiled with salt and cooked as a broth, in which case continuous stirring is required. Boiling water should turn yellowish, which indicates that the buds are ready to eat. Otherwise, they will taste bitter.

Acacia acatensis timber is used in Copalillo to build palm houses, to make fences for cattle keeping, and as fuel (for cooking, mainly).

By proximal chemical analysis, crude protein was found to be 39.9% in dry samples (mean values). *Acacia acatensis* is an interesting source of protein, if compared to other traditional alimentary plants from a similar zone (Table 1) (2). Other references taken for comparison purposes were the crude protein content of *Cnidioscolus chayamansa*, another popular edible plant in Mexico, reported to be between 24.67 and 39.5% in a dry base (11).

Acacia acatensis Benth has been reported with other vernacular names, as Guajillo in Puebla, and as Guayalote and Guayote in Michoacán (4). This author reported 51 different species of *Acacia* in Mexico. Recently, and in the same physiographic area, the Balsas river Basin, *A. acatensis* was reported among 300 different species collected (12). As a reference, in an extensive study carried out in Alcozauca, municipality of Guerrero, 162 species were reported as being edible plants (2). Some of the alimentary plants frequently referred to us in Copalillo were also reported in Alcozauca: *Leucaena esculenta*, *Phitecollobium dulce*, *Crotalaria pumila*, *Amaranthus hybridus*, *Anoda cristata*, *Portulacca oleracea* and *Porophyllum ruderale*. As these authors state, an integrated effort involving new strategies and old wisdom is needed to offer alternatives for regional development. Local sources of protein, traditionally used, as is the case of *A. acatensis*, are not enough. They require potentiating policies and strategies.

ADDED MATERIAL

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TABLE 1. COMPARISON BETWEEN THE CHEMICAL PROXIMAL ANALYSIS AVERAGE OF ACACIA ACATLENSIS FROM COPALILLO, CUERRERO, AND OTHER WILD ALIMENTARY SPECIES REPORTED IN ALCOZAUCA(FN*), GUERRERO, MEXICO.

| Plant | Crude protein % | Dry matter % | Humidity % | Crude grease % | Ashes % |
|------------------------------|-----------------|---------------|------------|----------------|---------|
| <i>Acacia acatzensis</i> | | | | | |
| flowers | 36.65 | 91.9 | 8.1 | 0.6 | 5.8 |
| <i>Leucaena leucocephala</i> | | | | | |
| seeds | 31.82 | 28.43 | 71.57 | 2.48 | 4.97 |
| <i>Anoda cristata</i> | | | | | |
| vegetable | 30.94 | 17.8 | 82.2 | 5.8 | 12.97 |
| <i>Sicius</i> sp | | | | | |
| vegetable | 28.9 | 16.7 | 83.3 | 4.95 | 9.72 |
| <i>Cinanchum jalscanum</i> | | | | | |
| vegetable | 22.45 | 17.98 | 82.02 | 7.83 | 12.11 |
| <i>Euphorbia graminea</i> | | | | | |
| vegetable | 20.97 | 15.2 | 84.8 | 5.72 | 14.26 |
| <i>Phaseolus coccineus</i> | | | | | |
| seeds | 20.8 | 96.7 | 3.3 | 2.2 | 4.8 |
| <i>Melothria pringley</i> | | | | | |
| fruits | 12.85 | 10.54 | 89.46 | 4.47 | 7.74 |
| vegetables | 18.6 | 16.43 | 83.57 | 3.31 | 13.17 |
| | | | | Free nitrogen | |
| | | | | extract % | |
| Plant | | Crude fiber % | | | |
| <i>Acacia acatzensis</i> | | | | | |
| flowers | | 11.45 | | 37.3 | |
| <i>Leucaena leucocephala</i> | | | | | |

| | | |
|-----------------------------|-------|-------|
| seeds | 15.99 | 44.74 |
| <i>Anoda cristata</i> | | |
| vegetable | 9.12 | 41.17 |
| <i>Sicius</i> sp | | |
| vegetable | 13.89 | 42.54 |
| <i>Cinanchum jaliscanum</i> | | |
| vegetable | 11.98 | 45.63 |
| <i>Euphorbia graminea</i> | | |
| vegetable | 5.14 | 43.91 |
| <i>Phaseolus coccineus</i> | | |
| seeds | 6.3 | 62.7 |
| <i>Melothria pringley</i> | | |
| fruits | 18.29 | 56.65 |
| vegetables | 9.62 | 53.5 |

FOOTNOTE

* Source: Casas, Viveros and Caballero, 1994:220

Fig. 1. The study area.

Fig. 2. Flowering branch, *Acacia acatlensis*.