Brazilian propolis and its therapeutic use

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Brazil is a great exporter of green and red propolis

The export of green propolis to Japan began in the 1990s and after this date became known in different countries of the world

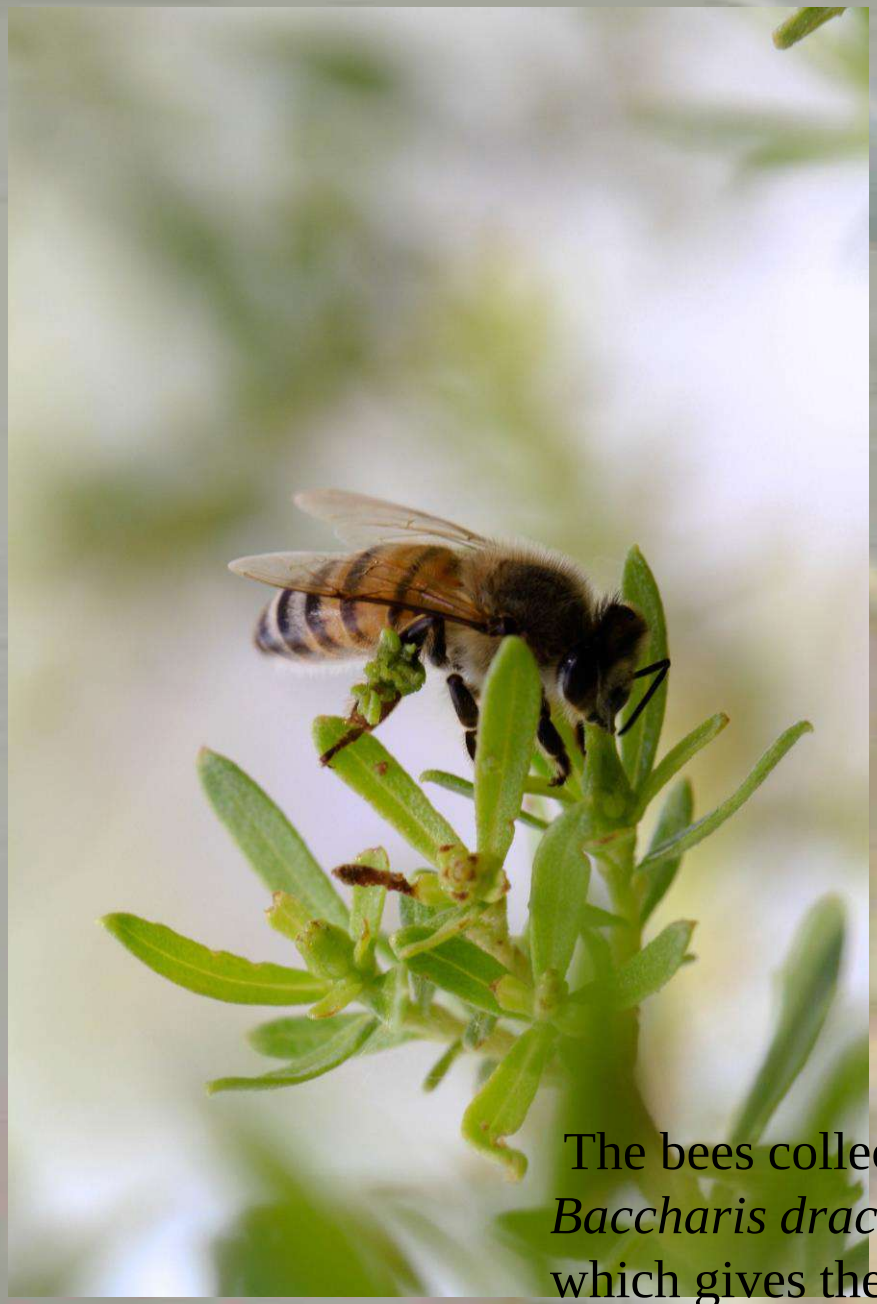
Botany origin, physico-chemical properties and antimicrobial activity of green propolis produced in Minas Gerais/ Brazil

These characteristics are the great difference of this product for other propolis produced in different countries

(1993- 1996) Botanical Origin

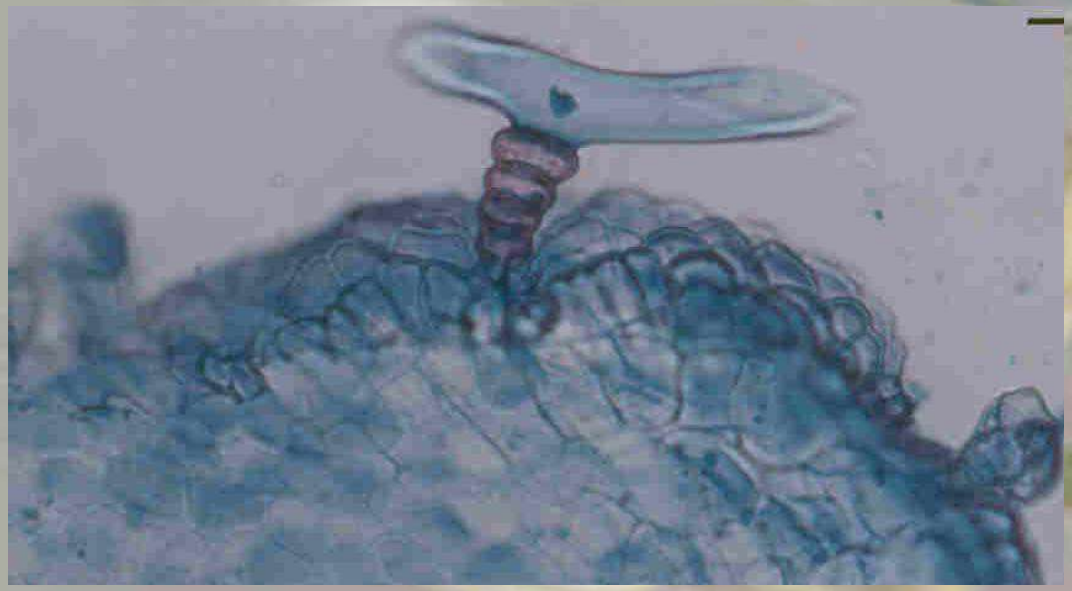
Baccharis dracunculifolia (alecrim do campo) can be found as the predominant species and main source of resin for the production of green propolis.

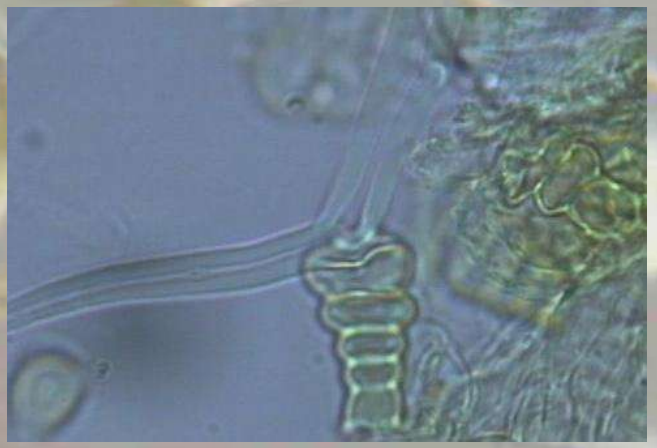
This plant is invasive of anthropic areas.

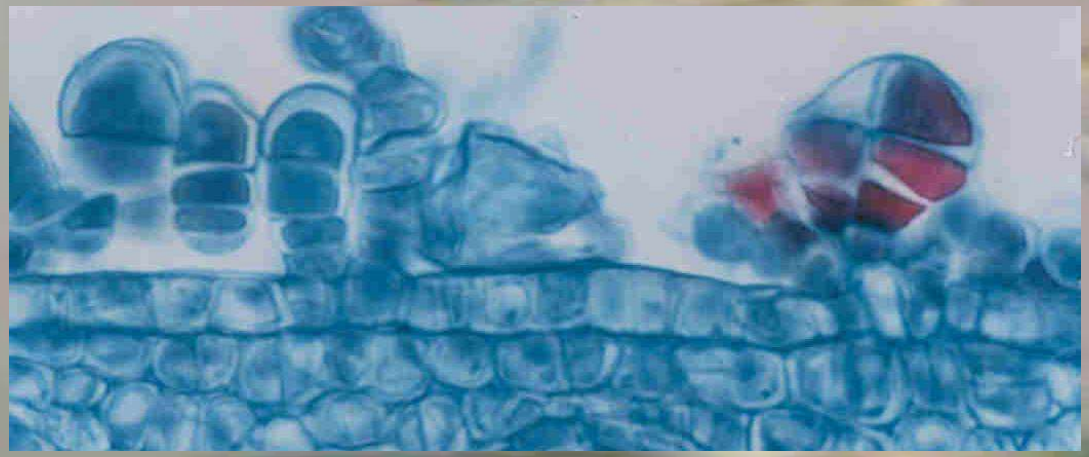


The bees collect the resin from the vegetative apices of *Baccharis dracunculifolia* and carry fragments of the plant, which gives the green coloration to this propolis

In the microscopic analysis of green propolis, we found *Baccharis dracunculifolia* secretory structures.







After publishing the botanical origin of this propolis in Japan, the green propolis of Brazil was no longer sold as propolis of *Eucalyptus* (2000), which devalued this product

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ミツバチ科学 21(4): 179—180
Honeybee Science (2000)

ブラジル・ミナスジェライス産 グリーンプロポリスの顕微鏡分析

Esther M.A.F. Bastos, Virginia D.C. Oliveira, Ademilson E.E. Soares

プロポリスは樹脂を分泌する植物の芽などからミツバチ *Apis mellifera* が集めた樹脂性の物質である．プロポリスにはミツバチの巣に由来する花粉やろう，微量の糖も含まれる．一方，ミツバチが植物を訪れて樹脂を集める際，葉の断片，腺毛，非腺毛，シュウ酸カルシウムの結晶，分泌ディスク，あるいは花粉粒などを一緒に持ち帰るので，こうした植物由来のもので起源植物を特定することができる．

この研究では，ミナスジェライス州産のプロポリスについて，その植物起源の顕微鏡分析による特定を試みた．

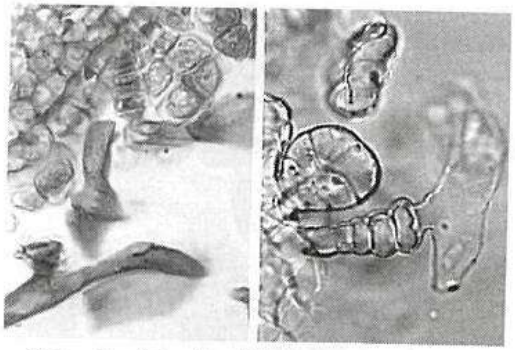


図1 プロポリス中の植物断片（滲出物分泌腺）

結果および考察

最も頻繁に見られた花粉粒は *Baccharis*

In 2001

Biological parameters associated with the production of green propolis

(1) richness and abundance of visiting insects in the populations of *Baccharis dracunculifolia*;

(2) visitation of *Apis mellifera* for resin collection;

(3) presence of *Baccharopelma dracunculifoliae* galls

The results of this research showed that the plant *Baccharis dracunculifolia*, co evolved with this insect, and there is a relationship between the presence of this insect in the plant and the production of green propolis

Baccharopelma baccharidis **(Hemyptera: Psyllidae)**

Baccharis dracunculifolia, grows in anthropic areas of very poor soils, with very low pH. This environment favors the attack of many pests, including ants and fungi.

The plant modifies its leaves to house this insect during its development, this insect places its eggs in the base of the leaves, inducing the plants to produce phenolic substances that protect them from the attack of herbivory.

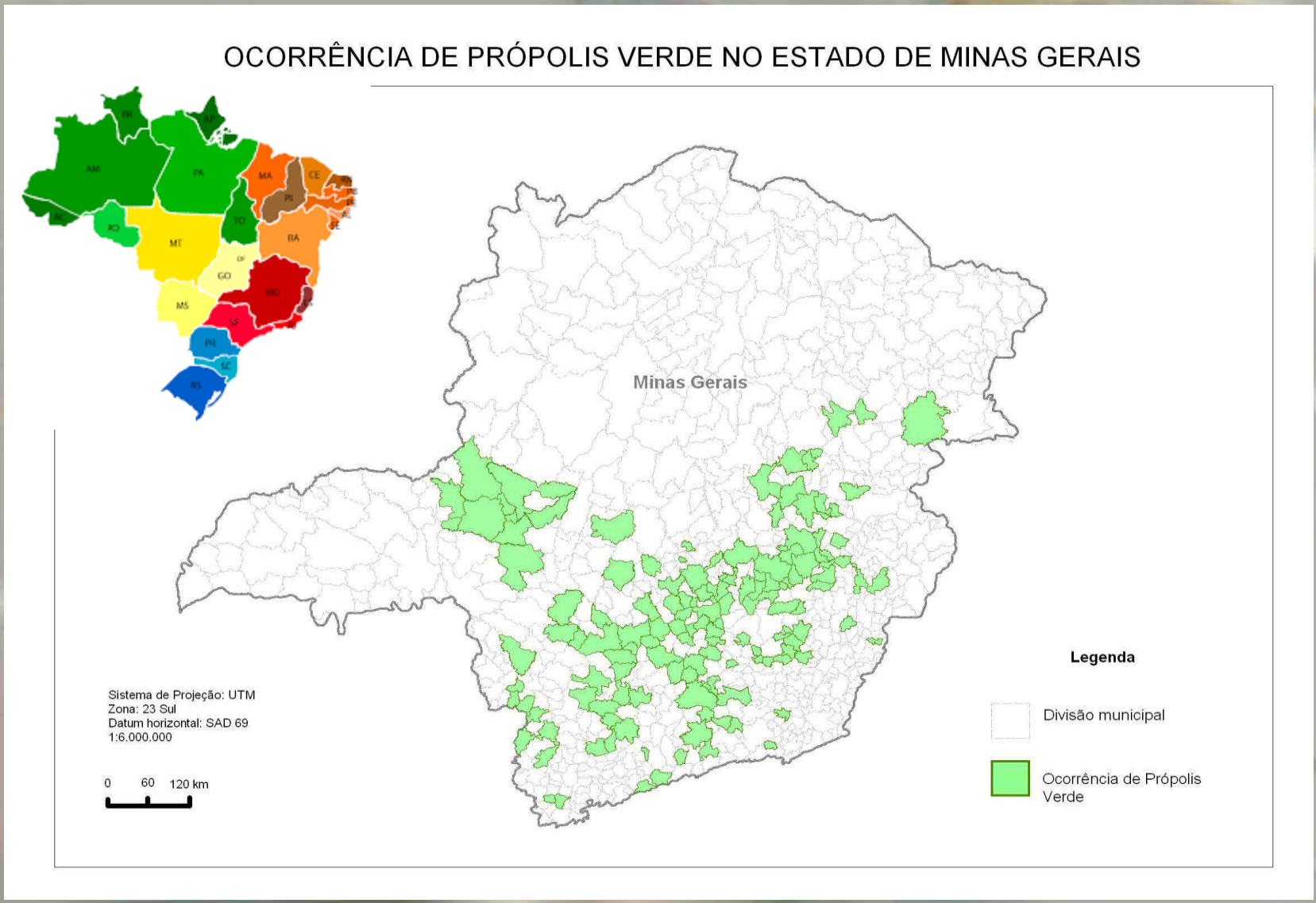
Apis mellifera bees are exotic in Brazil and are attracted by the odor exuded by resin, collecting it to use as a defense the hive

Soil analysis of the areas producing green propolis

		mg/ dm^3	cmolc/ dm^3	mg/ dm^3	mg/ dm^3	mg/ dm^3
	Ph	P	Ca	Fe	Cu	B
Própolis verde	4,0-5,9	0,4- 2,2	0- 2,3	69- 174	0- 9,8	0- 0,5

mg/dm^3- miligrama/decímetro cúbico- cmolc/dm^3- centimoles/ decímetros cúbico

The green propolis producing areas are the same where the iron mines are situed



Interaction between *Apis mellifera* L. and *Baccharis dracunculifolia* DC, that favours green propolis production in Minas Gerais

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Abstract

In Minas Gerais, green propolis is produced from the collection of resinous substance found in shoot apices of *Baccharis dracunculifolia*. The aim of this study was to evaluate the biological parameters associated with the interaction *Apis mellifera* x *Baccharis dracunculifolia*, to elucidate the supply of resin for green propolis production in Minas Gerais. We selected male and female individuals of two populations of *Baccharis dracunculifolia* located on São Judas Tadeu Farm – FSJT, in the municipality of Betim, MG and the Experimental Garden of the Ezequiel Dias Foundation – HORTO, located in an urban area in Belo Horizonte, MG. We made weekly observations, from June 2007 to June 2008, and evaluated in both populations: richness and abundance of insect visitors; resin collecting visits of *Apis mellifera*; presence of *Baccharopelma dracunculifoliae* galls; growth of individuals and phenological phases. Statistical analyses were made using R software. The rainy season showed the highest number of visitors. *A. mellifera* collected resin in shoot apices of *Baccharis dracunculifolia* from August to April, only in the FSJT population, where galls of *B. dracunculifoliae* were also present. Ovoposition of gall inductor on host plants occurs during the rainy season, when there is a peak of visitants and resin collecting visits of honeybees. This fact stimulates plant defense strategies against parasitoids and predators, which includes the production of several secondary metabolites, and ultimately reduces competition for food by inhibiting the attack of other phytophagous insects, not adapted to the chemical environment of plant tissues. Green propolis production in Minas Gerais is related to the abundant supply of resin by *Baccharis dracunculifolia*, when they are parasitised by *B. dracunculifoliae* galls. They induce plant production of defense exudates, which attract

The green propolis was characterized

Aroma, flavor, coloration, physical-chemical, microbiological, microscopic and therapeutic indications

The hives are installed in shaded areas

Covered with plastic for protection of ultraviolet light and humidity

way of production

Collection, transport and storage procedures were standardized

Characterization of GREEN PROPOLIS and forms of production, is described in its denomination of origin (DO)

GREEN PROPOLIS

It has great potential for the development of new apitherapic drugs

Microorganisms of clinical interest of the oral cavity, and skin:

Candida albicans ATCC 36802,

- ★ *Lactobacillus casei ATCC 7469,*
- ★ *Porphyromonas gingivalis ATCC 49917,*
- ★ *Prevotela melaninogenica ATCC 25845,*
- ★ *Staphylococcus aureus ATCC 25923,*
- ★ *Streptococcus mutans ATCC 25175.*

High antioxidant activity

Antiviral (Herpes and HPV), anticancer

Artepelin C is the principal components the brazilian green propolis

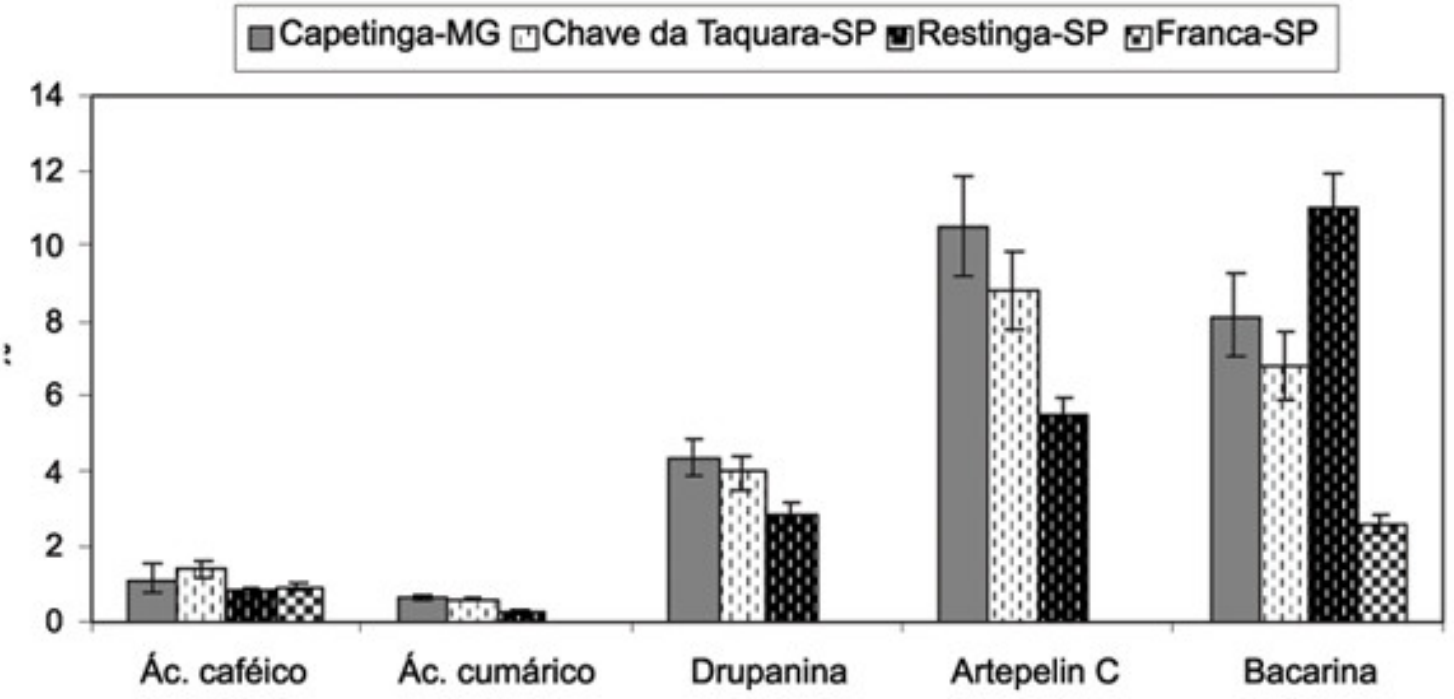


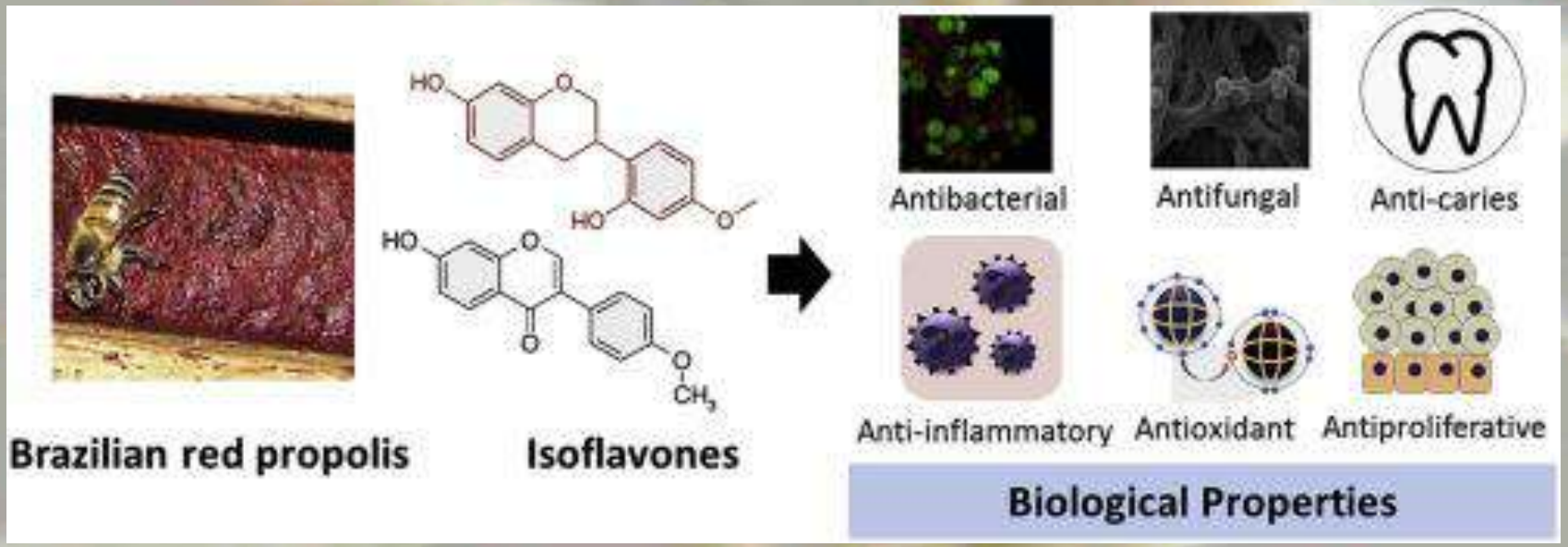
Figura 1. Média dos teores dos principais ácidos fenólicos presentes nas quatro melhores amostras estudadas.

Red Propolis of Alagoas Brasil

The plant is *Dalbergia ecastophyllum* (L.) Taub. Family: Fabaceae (Leguminosae).

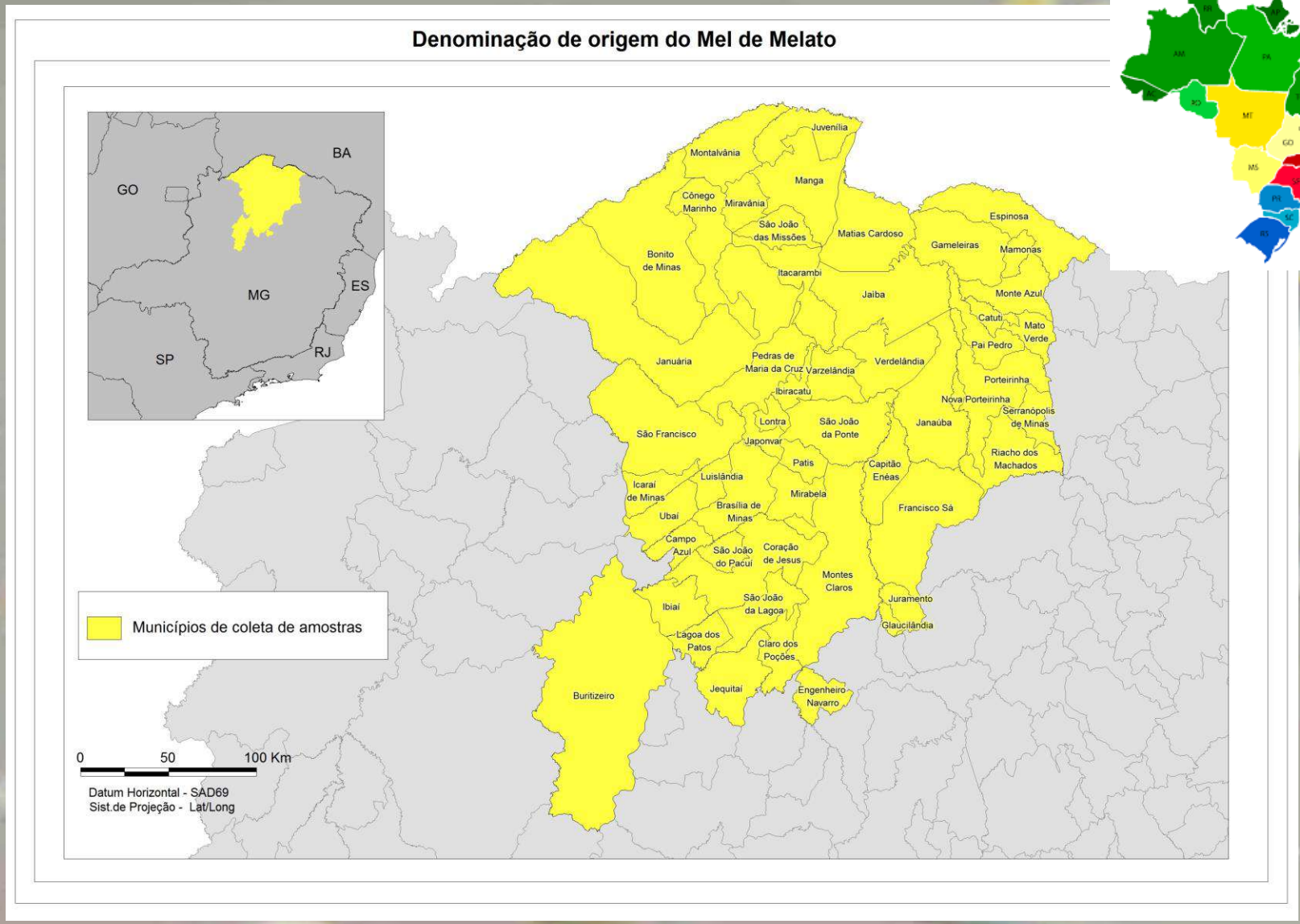
Similar to the green propolis, there is an interaction between the beetles that complete the life cycle in this plant, they stick the stem and release the resin exudation attractive to the bees.

Biological properties the Brazilian Red Propolis



Brazil has different products of the bees obtained by the interaction Insect Plant

Aroeira Honey



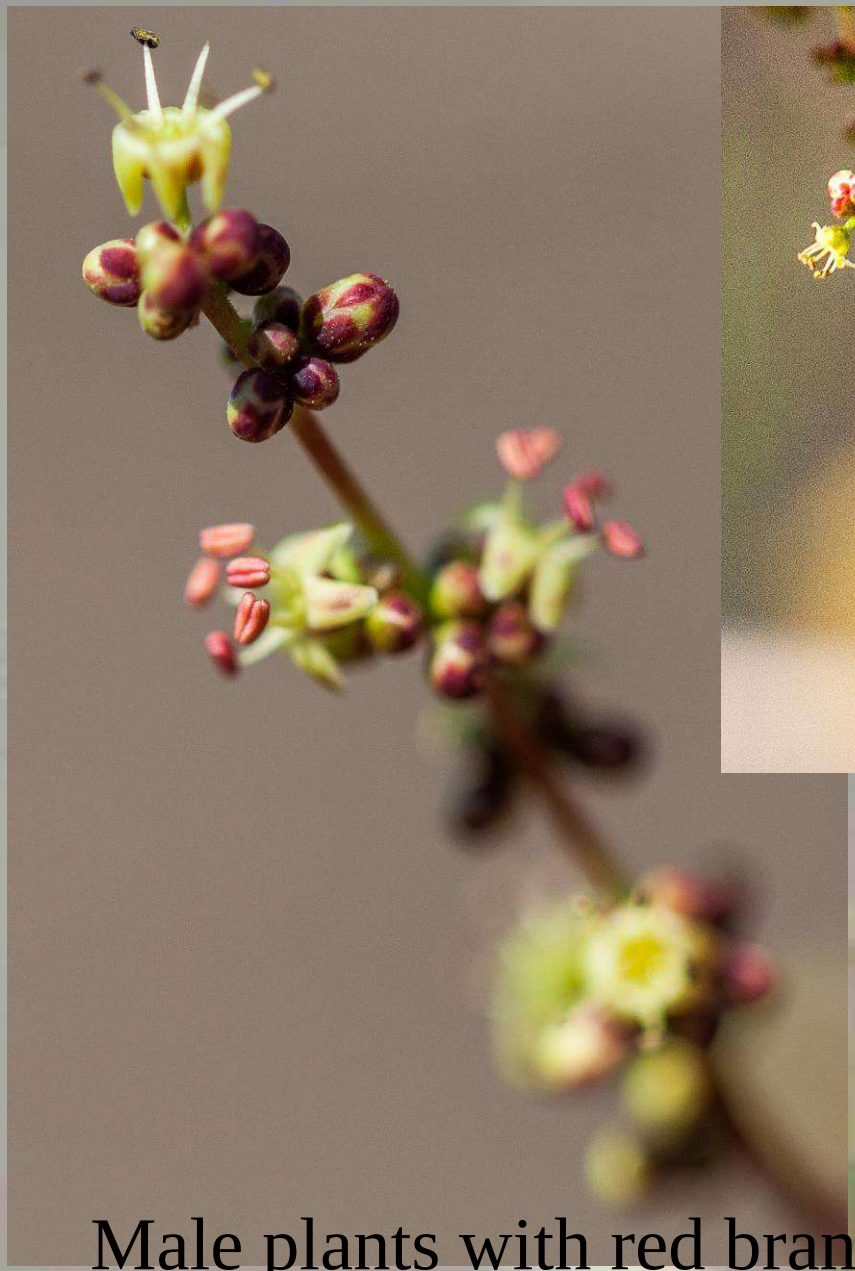
This kind of honey is produced in the north of Minas Gerais / Brazil in 54 municipalities of extreme dry

With the results of researches developed in this area it was possible to construct the Denomination of Origin of this kind of honey.

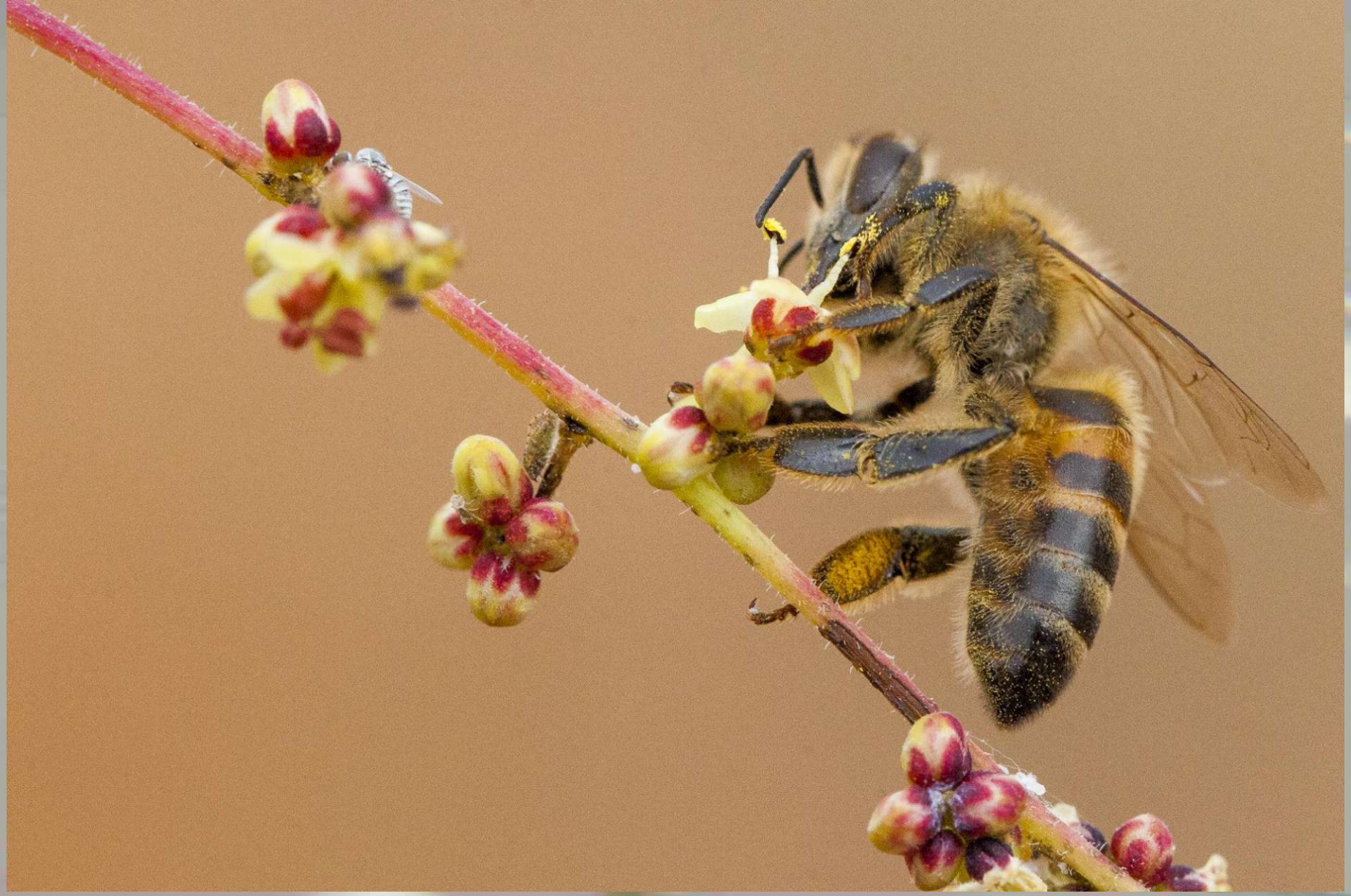
- This kind of honey is produced in a Dry Forest Fragment in the State of Minas Gerais / Brazil
- This Biome has high temperatures where plants adapted to this ecosystem survive.

Aroeira (*Myracrodum urundeuva*) is a large tree, which loses all leaves before it blossoms, in dry season

- Female plant with red branches indicating presence of flavonoids



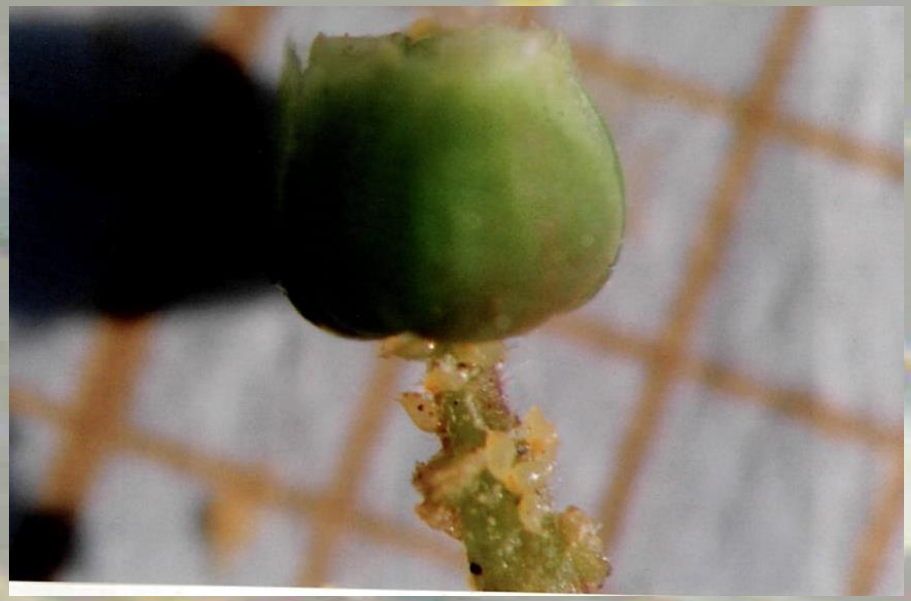
Male plants with red branches
indicating the presence of flavonoids



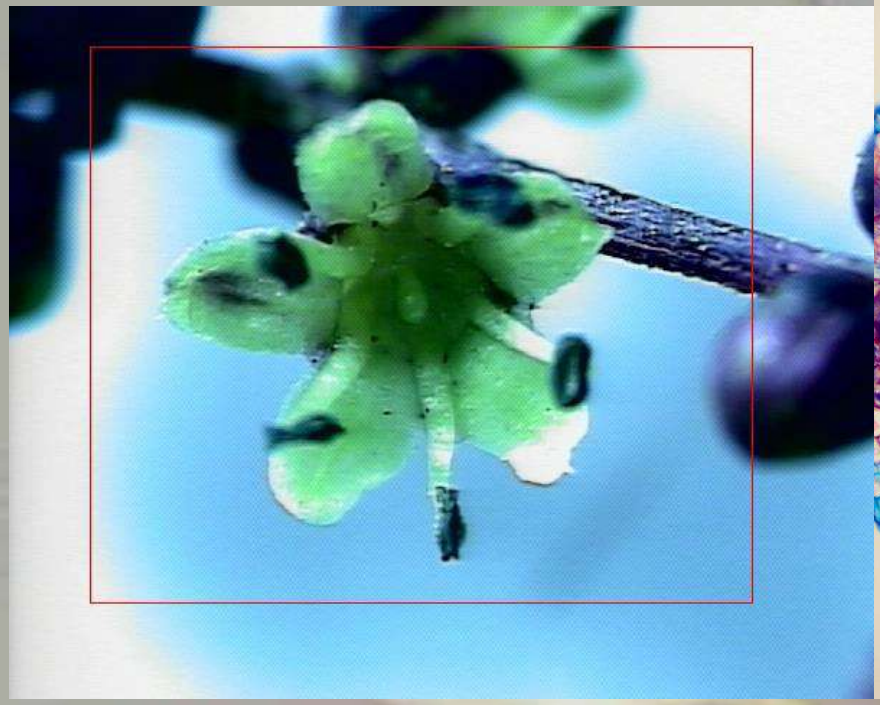
- Aroeira produces large quantities of pollen grains
- Bees visit male and female plants for collecting nectar

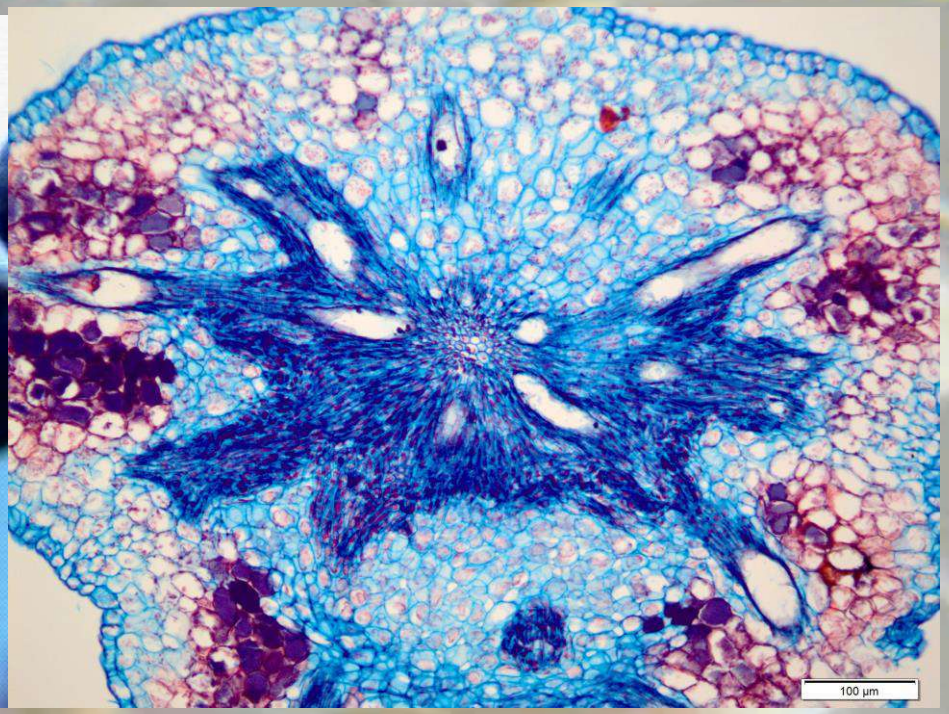
- In Aroeira lives a hemipter (*Taynaires myracrodum*)

The main function of this insects associated with this plant is induce the production of flavonoids compounds

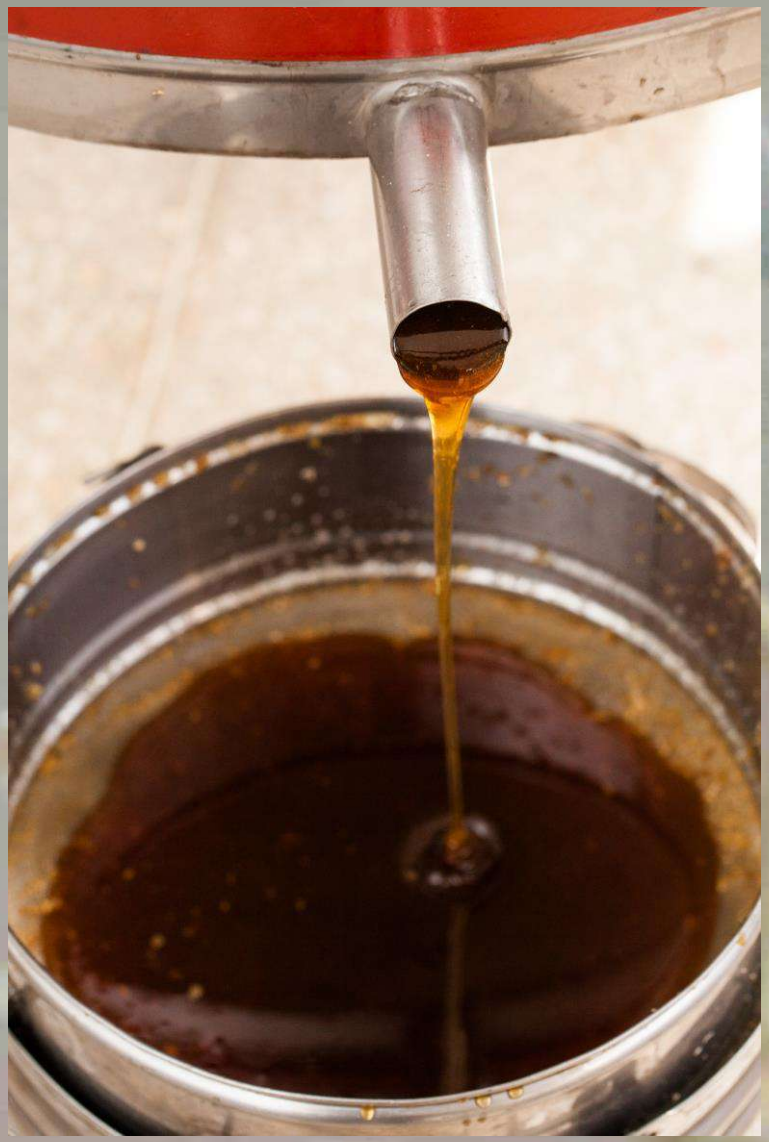


(Taynaires myracrodum), completes the entire life cycle of this plant, eggs, nymphs and adult insects. Inducing the plant to produce flavonoids compounds, which protects the plant from high temperature and ultraviolet light. natural sunscreen from Aroeira.





(*Taynaires myracrodum*), performs cells located in flowers, Idioblasts, whose content is filled with flavonoids compounds. This secretion is mixed with nectar, offering bees foods rich in sugars and flavonoids substances.



This kind of honey is very dark, and has a high content of flavonoids compounds 110.89 - 339.71mg / 100g, levels similar to that found in Manuka honey.
High biological activity against *Helicobacter pylori* and Gram negative microorganisms

Honeydew Honey Bracatinga

This kind of honeydew honey is obtained from the insect exudate (*Tachardiella* sp) that infest the species of bracatinga (*Mimosa scabrella* Bentham).

- This honeydew is very dark, does not crystallize, has high electrical conductivity.
- High antioxidant activity in vitro
- High levels of flavonoids compounds, higher concentrations of quercetin and benzoic, caffeic, chlorogenic, ferulic, cumaric and siringeic acids..

- This honeydew honey is produced in the states of Santa Catarina and Rio Grande do Sul, biannually and its production is totally bio.

With the objective of developing new bioproducts for Health

They established a company with exclusivity in the BIC / Granada Spain Technology Park

Gel and Mouthwash of
Green Propolis

Mucosites

Diseases that develop in the oral cavity due to the low immunity of the organism.

such as aids, chemotherapy and irradiated head and neck, use of removable total prosthesis

Under development **To the market in 2019**	**Products obtained using Biotechnology**
Gel and Mouthwash of Green Propolis	
Vaginal cream **Lipstick Protector** **Hospitality Sanitizantes** **Formulations with apitoxin / pain and inflammation** **Veterinary line for pets, large animals and bees** **Honey with Amazonian essential oils/ Acai and Copaiba**	

Brasil Iberica Apitherapy S.L

- Works with raw materials of Brazilian biodiversity with Denomination of origin

Propolis and honey

Brazilian Honey and Honeydew Honey

For sale in Europe

Health respecting the environment with the preservation of bees

Thanks!!!!

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