Marketing and Evolution of Anthropoentomophagy

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Lineville, AL, USA, April, 2010.

It exists different ways to trade edible insects, those that are fresh and alive can be sell in the "tianguis", markets or in the streets.

By fits, plastic bags or “cazuelitas” of different size and cost.

By sardine, tuna or chilli cans

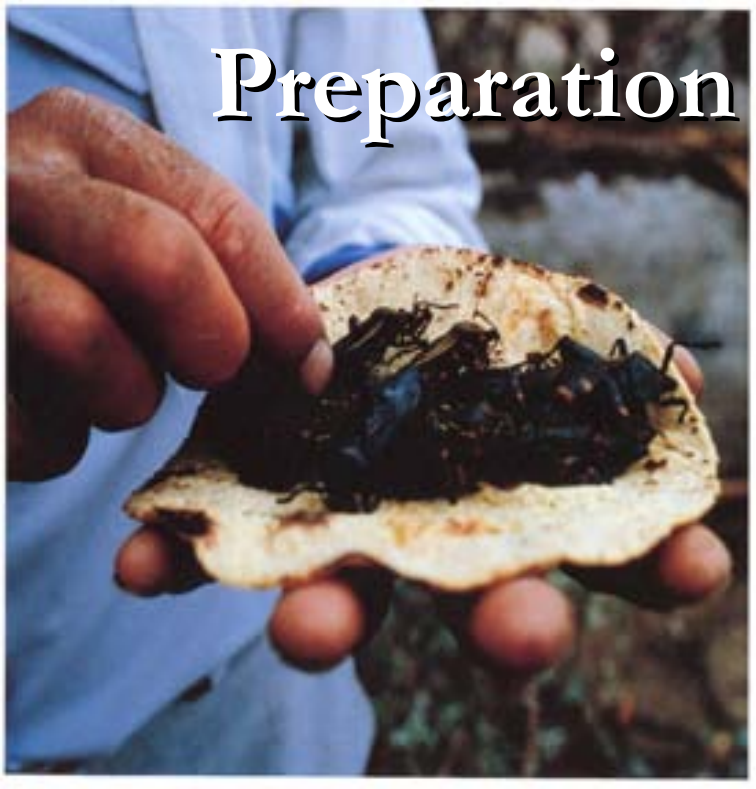
Or big bags of 50 kg.

Cricketes
Salt N' Vinegar
Cricketes
Bacon & Cheese
Cricketes
Sour Cream & Onion

Larvets
BBQ
Larvets
Cheddar Cheese
Larvets
Mexican Spice

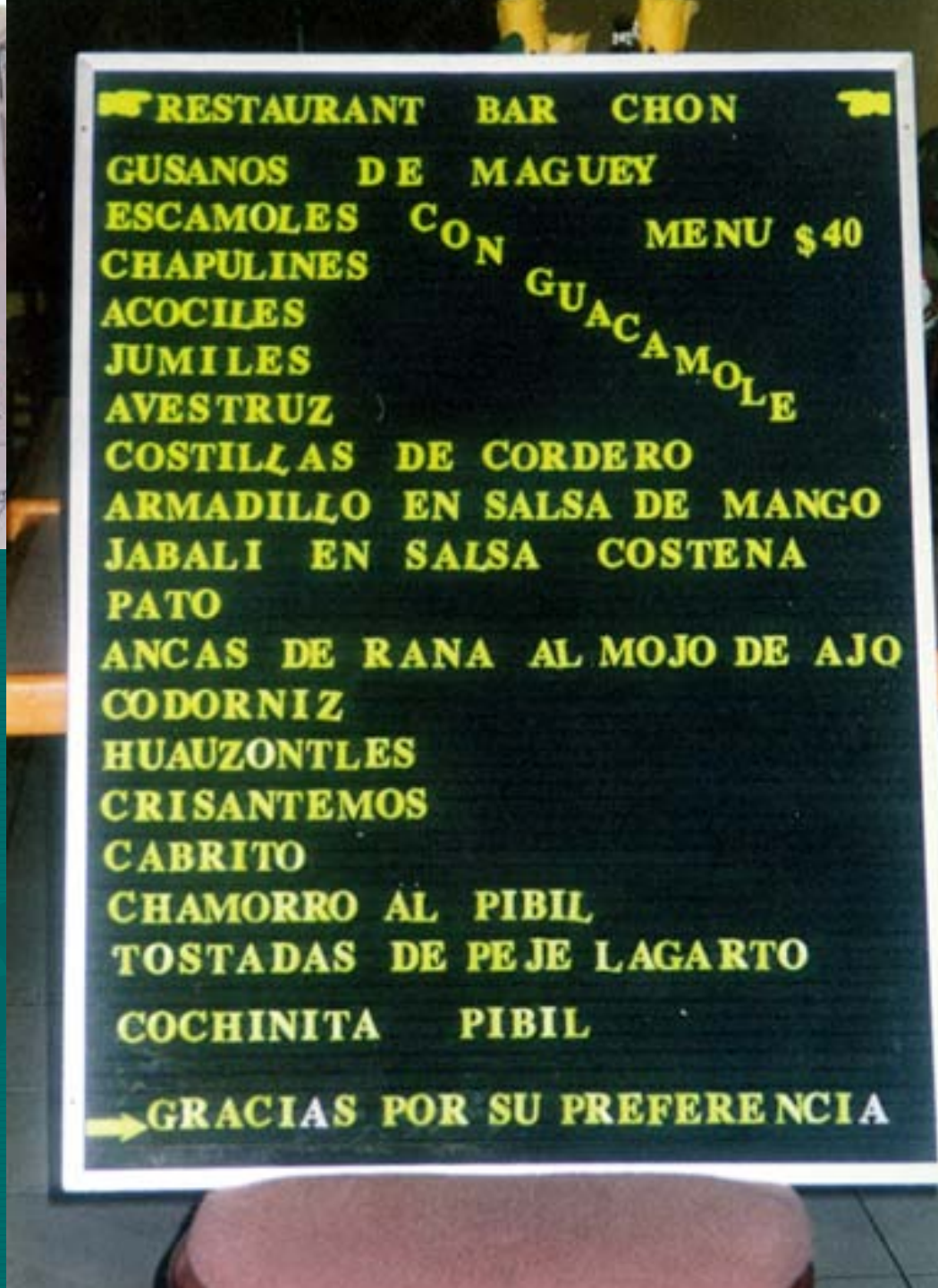

GIANT
TOASTED ANTS
MOPANI
WORMS

Preparation

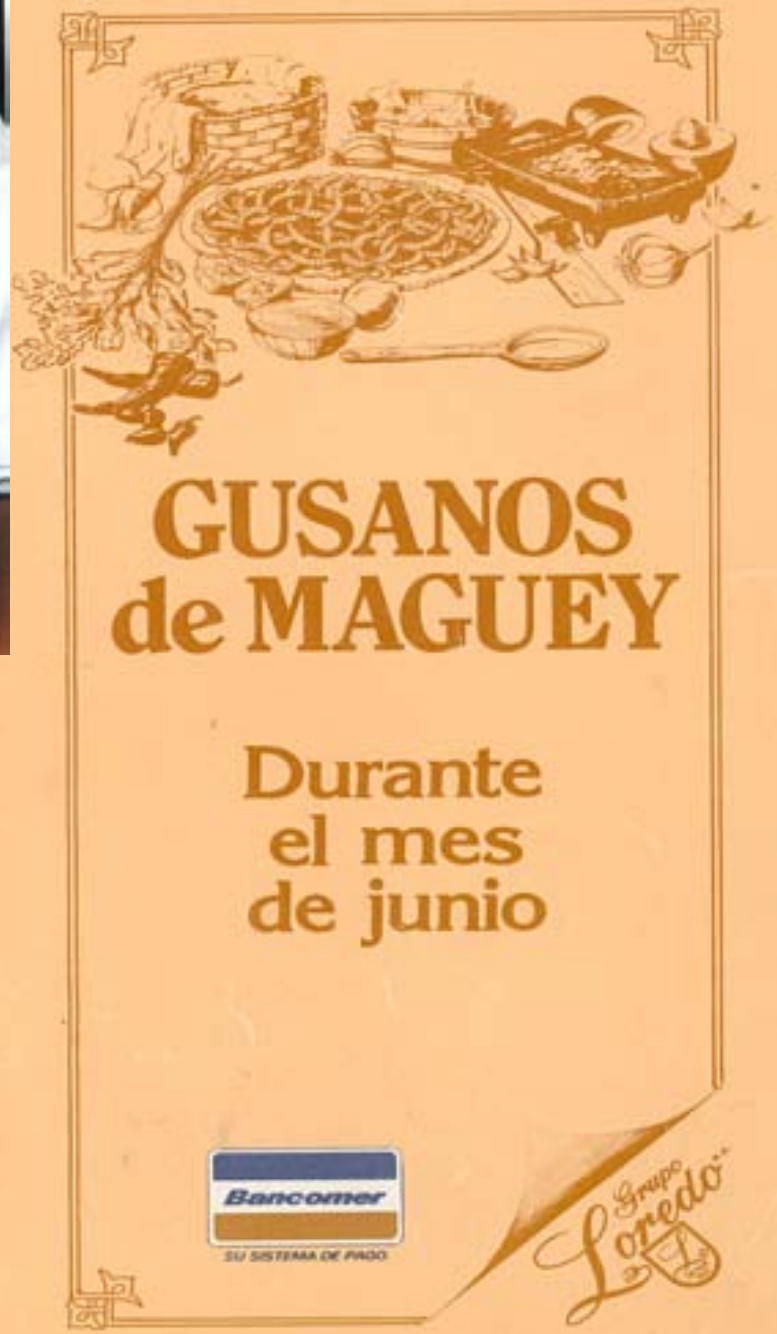



LA POSTA
RESTAURANT CAMPESTRE
LA·POSTA
ESCAMOLES
y CHINICUILES


"LOS COYOTES"
·VENADO·JABALI·COCODRILO·IGUANA
·GUSANOS DE MAGUEY·ESCAMOLES·LEON
·AVESTRUZ·BUFALO·TEPEXCUINTLE·FAISAN
·GALLINA DE GUINEA·CODORNISES·PERDISES
·CABRITO·LECHONES·PICHONES·CHINICUILES
·CORDERO NACIONAL E IMPORTADO·RACK
·AHUAUTLE
·CORTES AMERICANOS·ACOSIL


RESTAURANT BAR CHON
GUSANOS DE MAGUEY
ESCAMOLES
CHAPULINES
ACOCILES
JUMILES
AVESTRUZ
COSTILLAS DE CORDERO
ARMADILLO EN SALSA DE MANGO
JABALI EN SALSA COSTENA
PATO
ANCAS DE RANA AL MOJO DE AJO
CODORNIZ
HUAUZONTLES
CRISANTEMOS
CABRITO
CHAMORRO AL PIBIL
TOSTADAS DE PEJE LAGARTO
COCHINITA PIBIL
CON GUACAMOLE
MENU $40
GRACIAS POR SU PREFERENCIA


Restaurant Chon
ESPECIALIDADES PREHISPANICAS
ENTRADAS
Enmoles a la Mantequilla o Salsa verde $ 90.00
Chapulines con Guacamole $ 30.00
Acociles acompañados de Guacamole $ 30.00
Gusanos de Maguey con Salsa Nopales $100.00
Pancho de Salpicon de Venado (pieza) $8.00
Pancho de Cochinita Yucateca $8.00
Tostadas de pejo lagarto (pieza) $8.00
Quesadillas de Hongos (pieza) $6.00
Quesadillas de Flor de Calabaza (pieza) $6.00
Quesadillas de Queso (pieza) $6.00
Quesadillas de Cuitlacoche (pieza) $6.00
SOPAS
Sopa de Hongos $15.00
Sopa de Nopales $15.00
SOPA DE MEDULA $15.00
Sopa de Miyu $15.00
Consome de la Casa $15.00
Crema de Cuitlacoche $20.00
PLATOS MEXICANOS


GUSANOS
de MAGUEY
Durante
el mes
de junio
Bancomer
SU SISTEMA DE PAGO
Grupo Loredo


Sazonador
de Chapulín Molido
CHAPURRINES
CHAPULIN CONDIMENTADO DESHIDRATADO
SALPULÍN
SAL DE CHAPULÍN


Reese
GRASSHOPPERS
ANTS

Comida Alternativa

Entomofágia, Alimentación a Base de Insectos comestibles

Asiste a la Muestra Gastronomica "Comida alternativa" Entomofágia Alimentación a base de insectos comestibles divertidos platillos, muestra de danza contemporánea conferencias con la experta en el tema a nivel internacional. **Dra. Julieta Ramos Elorduy,** prueba deliciosos postres con insectos.

Exposición

28 de Nov

Hora 12:00 pm a 16:00 hrs

Museo

Alfredo Zalce

Entrada LIBRE

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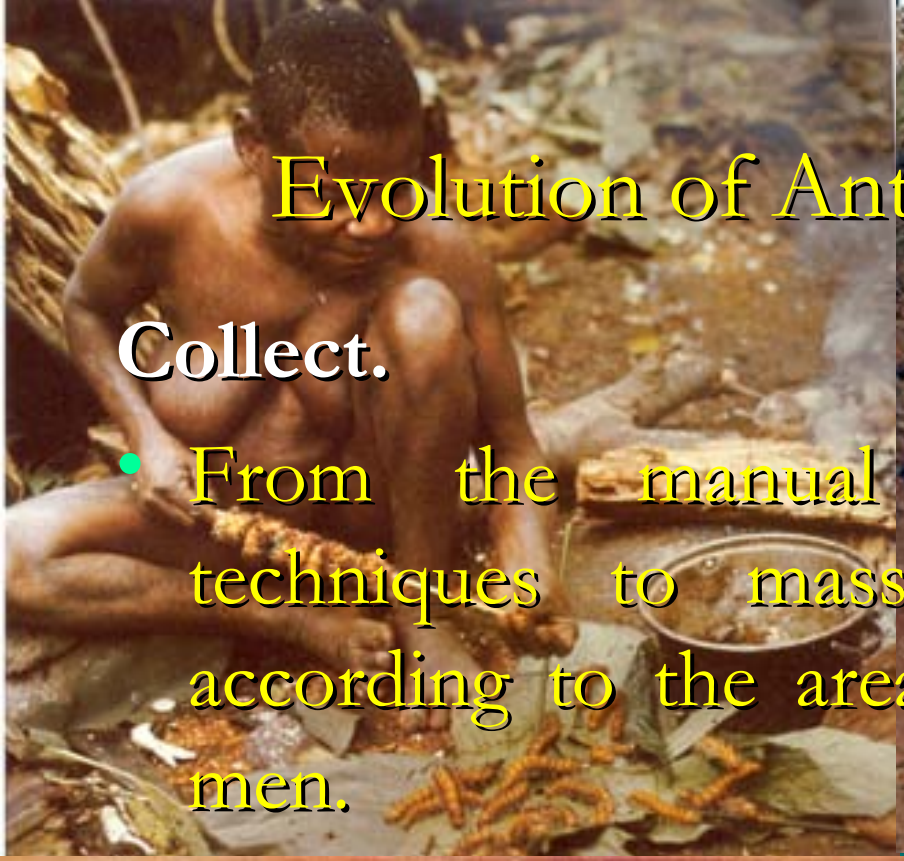
Change of attitude

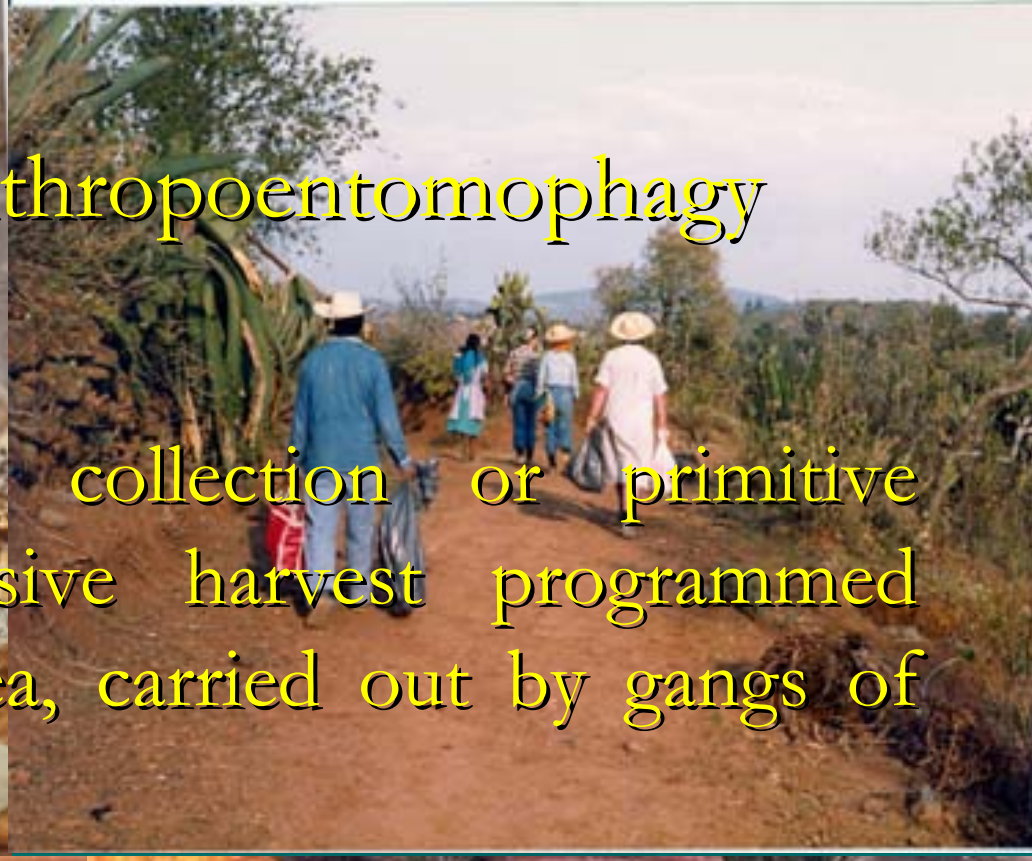
- People of the First World are increase their interest in edible insects and are motivated to consume, as well as chefs to cook them.
- It exists industries that process and can, to people of high purchasing power (Reese Metals Company, Chateau Brand, Holtix, etc.).
- Besides, there is a values inversion, as Americans are seeking natural foods like edible insects, in contrast to those of the Third World looking for more processed food.

Evolution of Anthropoentomophagy

Collect.

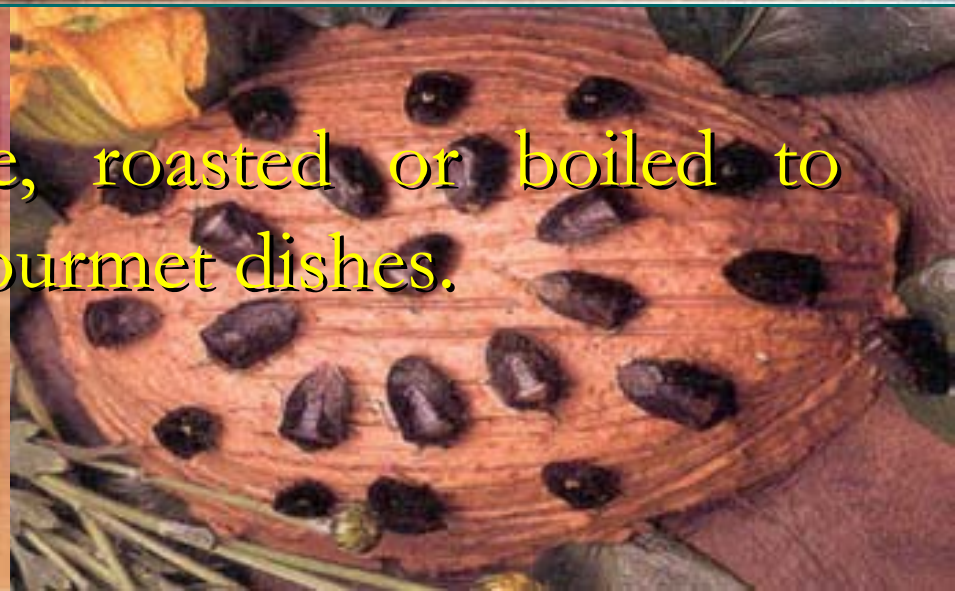
- From the manual collection or primitive techniques to massive harvest programmed according to the area, carried out by gangs of men.





Cook.

From just being alive, roasted or boiled to sophisticated kind of gourmet dishes.

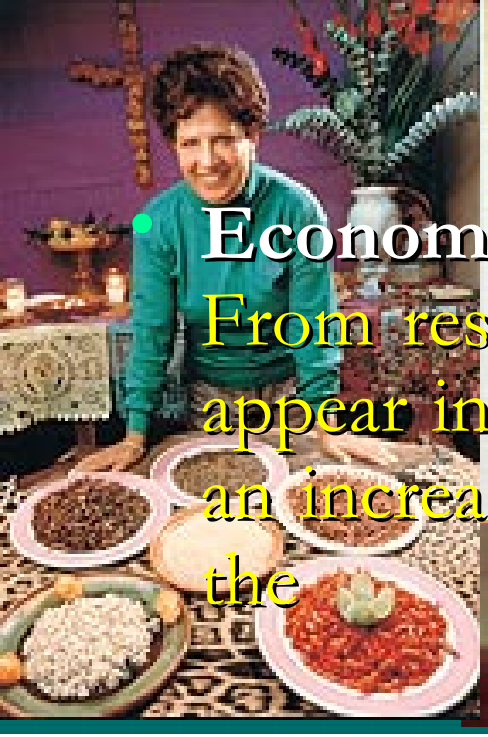


- **Marketing.**
  From their sale on "tianguis" day, by measures or fists, to be marketed in small towns to be in marketed in cities, to marketing in packages (Japan) or canned (United States, Japan, France, China, Mexico) in special stores.

- **Consumption.**
  First it was local, by states to arrive to national and international levels.

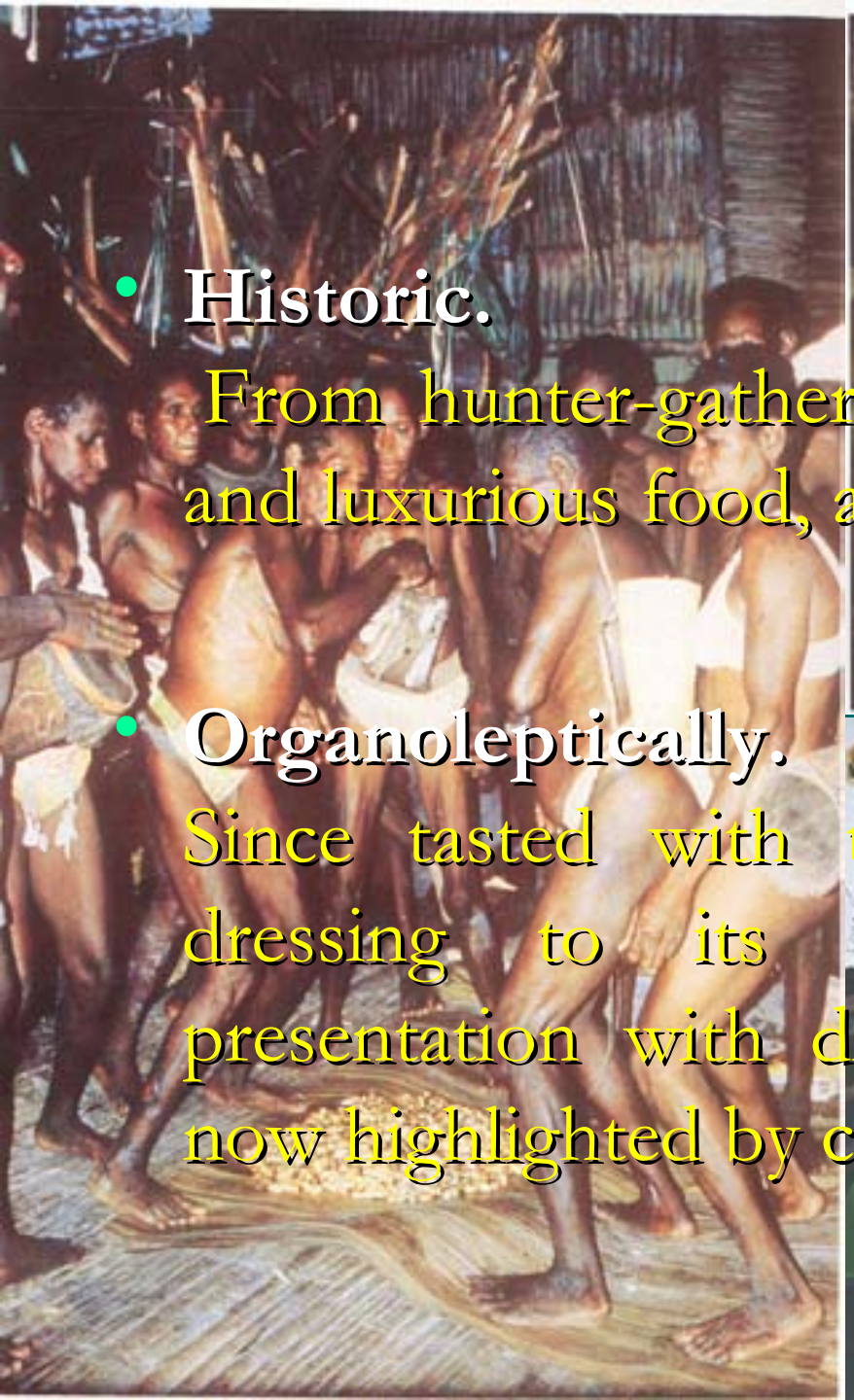
- Psychological.
  Include the rejection from "Western" cultures (United States, Canada, European Union) to its acceptance and demand.
- To conceive them as a “barbarian food”, to be worthy of achieving a significant reputation.

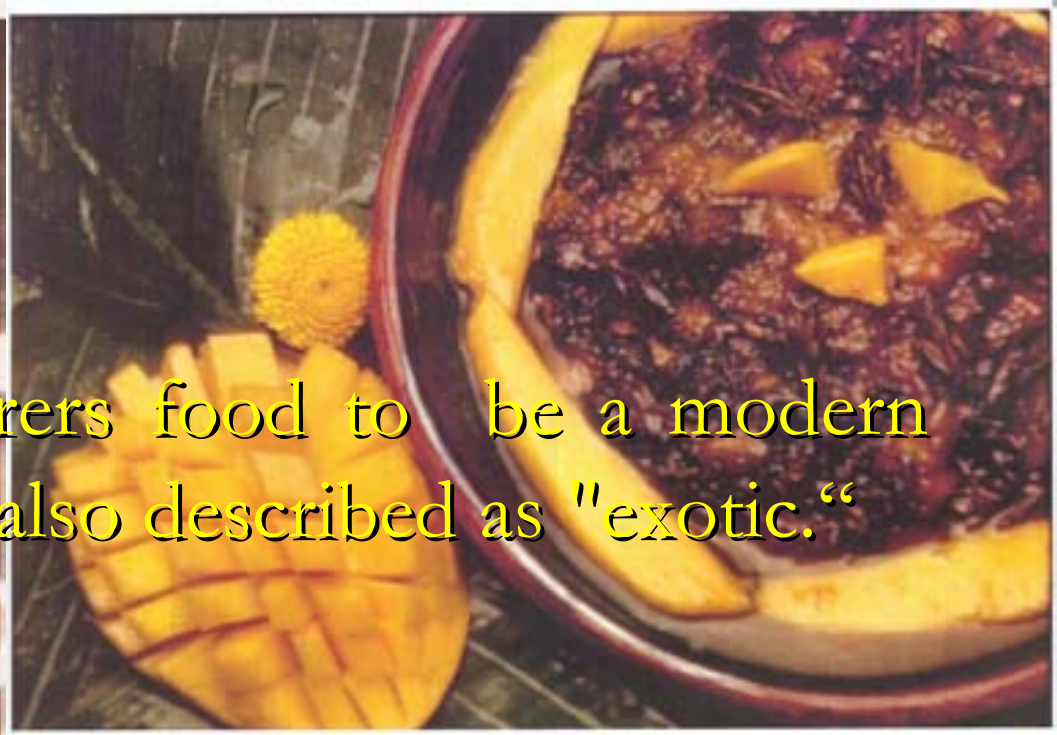
- Sociological.
  From to be considered “Indian food” and of “slaves”, qualifying as a "low prestige" food, to be eaten by the wealthy elites of various countries, designing it as “high prestige” food .



- **Economic.**
  From restaurants of little towns or in the roads, to appear in the menu of "five forks" restaurants with an increase in price, leading the gains implied from the whole chain trade.

- **Biological.**
  Since their collect in small amounts until obtained by ton or raise them in different scales.





- **Historic.**
  From hunter-gatherers food to be a modern and luxurious food, also described as "exotic.“

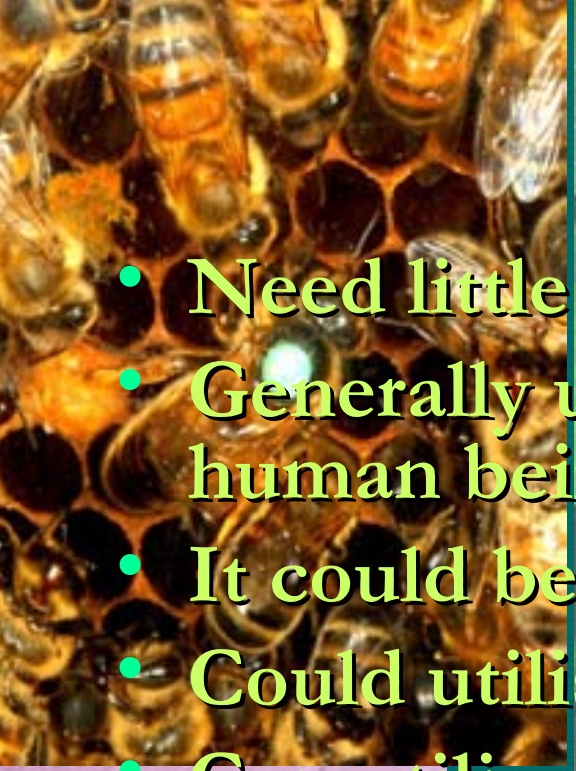
- **Organoleptically.**
  Since tasted with their real flavor, with no dressing to its synergism in a special presentation with different flavors mixed and now highlighted by chefs.

- **Veterinary.**
  From having cattle fed naturally to nourished animals with processed food, until raise insects recycling of organic wastes to feed them.

- **Academic.**
  From their ignorance and / or disdain, to give specialized courses at high school, professional or postgraduate courses (United States, Australia, Germany, Mexico, Brazil, etc.).

Edible Insects
Relevant factors

- Need little space.
- Generally used supplies not required by human beings.
- It could be do vertically.
- Could utilise subproducts of various crops.
- Can utilise very cheap materials of the same place.
- Could be select the omnivorous or polyphagus species according to the market and their nutritive value.



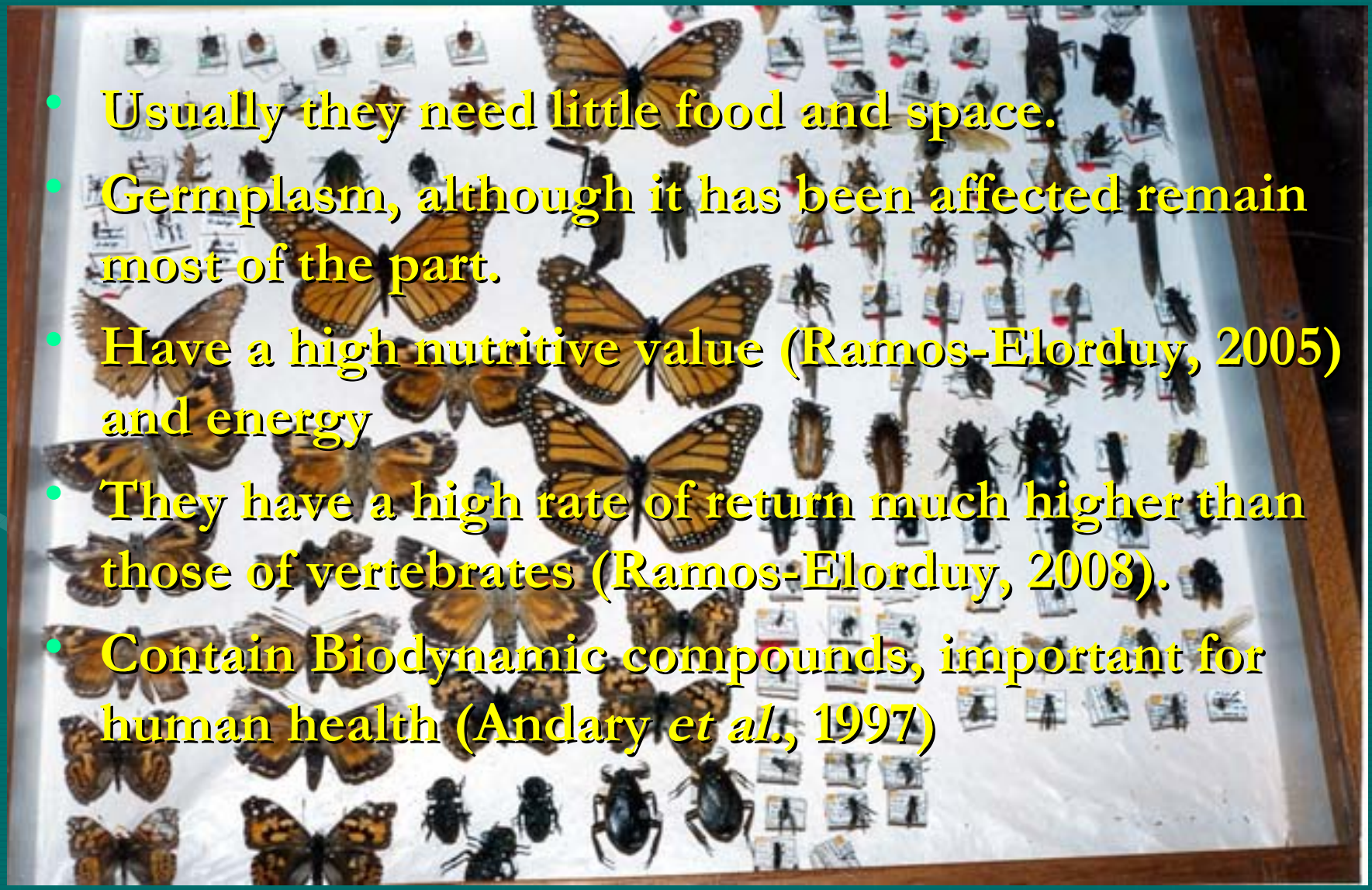
Edible Insects
Relevant factors

They shown a good efficiency conversion and transform their feed in increase of weight, quickly.
Could have many generations by year.
Have a big reproductive potential and good percentage survival.
Their culture as an agroindustry could have many socioeconomic benefits as labor absorption, supplying the domestic market, attracting foreign currencies, raising the standard of living of the rural population.

Characteristics of Insects

- Time spent on the planet
- 4/5 of animal kingdom
- They have a high biodiversity (terrestrial and freshwater).
- Rate of reproduction high.
- Have an ability to do mutation and survive.
- Many species generate a diapause when conditions are adverse.

Characteristics of Insects



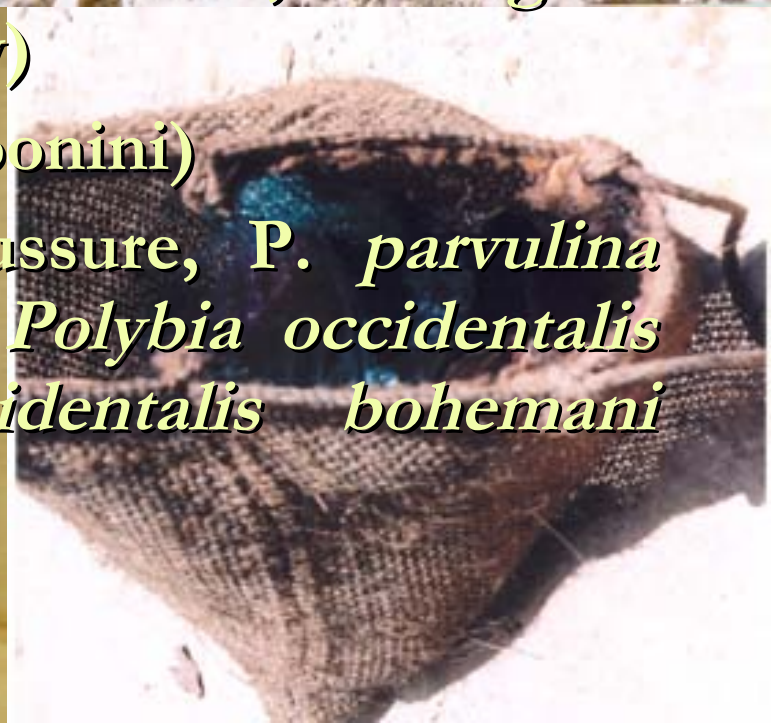
- Usually they need little food and space.
- Germplasm, although it has been affected remain most of the part.
- Have a high nutritive value (Ramos-Elorduy, 2005) and energy
- They have a high rate of return much higher than those of vertebrates (Ramos-Elorduy, 2008).
- Contain Biodynamic compounds, important for human health (Andary *et al.*, 1997)

Protocultures of edible insects in Mexico. Care of species

- Grasshoppers. Some areas are left without collecting
- Xamues. Nymphs gathered put in trees near home
- Cuecla. Arriving at the L6, picked the larvae and leave some organisms to reproduce.
- Striped worm. It takes the caring and gather L6.
- White worm. It takes care and the L6 are gather.
- Red worm. They take from agave plant and raise with "tortilla" to fatten.
- White grubs. Periodically remove the manure to follows their development.
- Wasps. The Foundation of the society is put close to the house.
- Escamoles ants. Take care of nests after exploited them

Cultures of edible insects in Mexico

- Bees (*Apis mellifera* L.)
- Cockroachs (*Periplaneta australasiae Fabricius*)
- Crickets (*Acheta domestica L., A. assimilis* (Fabricius))
- Bumble bees (*Bombus medius* Cresson, *B. diligens* Smith, *Bombus ephippiatus* Say)
- Stingless bees (Trigonini, Meliponini)
- Wasps (*Polistes instabilis* Saussure, P. *parvulina* Richards, P. canadensis L. y *Polybia occidentalis nigratella* Buysson, *P. occidentalis bohemani* Holmgren, *Epipona* sp.)



Cultures of edible insects in Mexico

- Aquatic bugs, Ahuauhtle, Axayacatl
- Mealybugs (*Dactylopius* coccus Costa, *D. confusus* (Cockerell), *D. indicus* Green)
- Beetles (*Rhynchophorus palmarum* (L.), *Tenebrio molitor* L., *Tribolium castaneum* Herbst, *T. confusum* Du Val, *Zophobas* spp.)
- Butterflies (*Bombyx mori* L., *Spodoptera* spp., *Helicoverpa (Heliothis) zea* Boddie)
- Flies (*Musca domestica* L., *Ephydra hians Say*, *Anastrepha ludens* Loew, *Drosophila melanogaster* Meigen.), entre otros más.

Medicinal Insects

- Insects have been used to treat 379 diseases
- 57 Skin
- 58 Digestive
- 34 Respiratory
- 31 Reproductive
- 28 Nervous-Lymphatic System
- 22 Urogenital
- 21 Circulatory
- 21 Ophtalmology
- 13 Neuromuscular
- 10 Bone
- 6 Immunologic
- 4 Endocrine
- 4 Hearing
- 43 Other types

- The preserved organisms are sold in markets, either dried or powdered.
- In Third World countries and in Asia there are specialty shops.

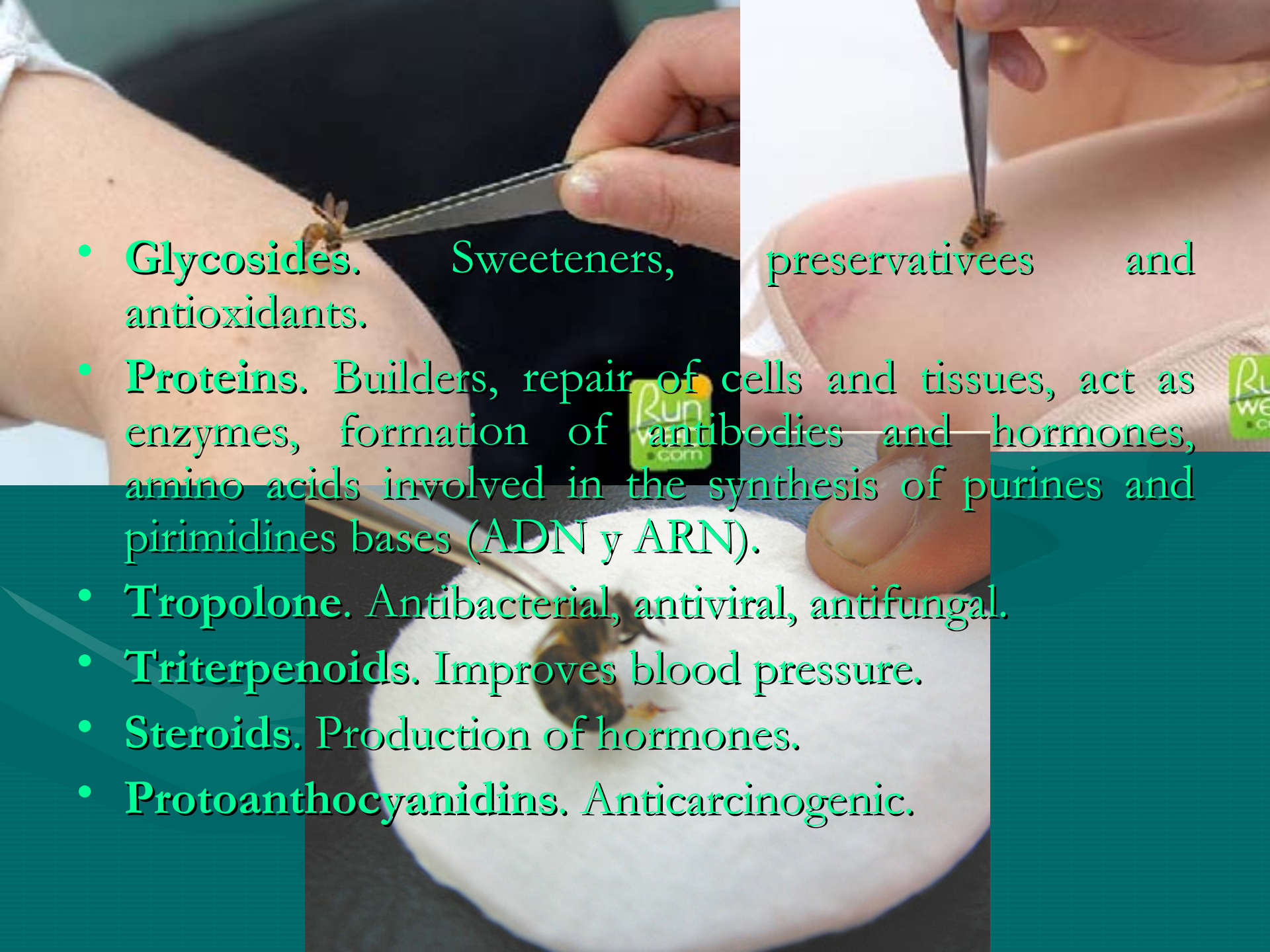
- The cuticle of insects has antibiotic substances.
- It is an agent for regulating homeostasis and tissue repair, cholesterol lowering or anticoagulant.
- Few active ingredients have been chemically isolated from insects.

Byodinamics compounds in certain medicinals insects

- Triterpenoids and Steroids
- Iridoid
- Tropolone
- Mucilage
- Saponins
- Phenolic acid derivatives
- Flavonoids
- Sugars
- Anthocyanins
- Protoanthocyanids
- Condensed taninns
- Gallics and ellagic taninns
- High-tannin polymerization
- Glycosylated Quinones
- Protoalkaloids
- Polyols

Biodymamic functions of some compounds from different medicinals insects of Mexico.

- Carotenoids. Dyes y antioxidants
- Iridoids. Antimicrobial, tonics, anti-inflamatories.
- Saponins. Prolong life and help resist stress.
- Phenolic acid derivatives. Color and flavor to food, antiinflamatoriy, anti-hepatotoxicity.
- Taninns. Heal wounds and burns, antitoxic, antiviral, antitumoral.
- Coumarins. Anticoagulant.
- Quinones. Involved in cellular respiration.
- Alkaloids. Increase muscle tone and contractility.



- **Glycosides**. Sweeteners, preservativees and antioxidants.
- **Proteins**. Builders, repair of cells and tissues, act as enzymes, formation of antibodies and hormones, amino acids involved in the synthesis of purines and pirimidines bases (ADN y ARN).
- **Tropolone**. Antibacterial, antiviral, antifungal.
- **Triterpenoids**. Improves blood pressure.
- **Steroids**. Production of hormones.
- **Protoanthocyanidins**. Anticarcinogenic.