

Ethnobotany. Lecture 15

Alexey Shipunov

Minot State University

February 18th, 2011

Outline

- 1 Notes about Thursday's excursion
- 2 Technical oil plants
- 3 Fruits and vegetables

Outline

- 1 Notes about Thursday's excursion
- 2 Technical oil plants
- 3 Fruits and vegetables

Outline

- 1 Notes about Thursday's excursion
- 2 Technical oil plants
- 3 Fruits and vegetables

Ferocactus sp.



Mammillaria sp.



Melocactus sp.



Opuntia sp.



Pereskia sp.



Rhipsalis sp.



≈ *Cereus* sp.



Astrophytum sp.



Achlorophyllous form



Aeonium sp. (Crassulaceae)



Echeveria sp. (Crassulaceae)



Lithops sp., Aizoaceae



Aizoaceae “windowed” leaves



Euphorbia sp.



Euphorbia inflorescences



Euphorbia cristata-like forms (fasciated growth)



Brighamia insignis from Hawaii



Brighamia as a weeble toy



Young *Welwitschia* in a pot



Tung, *Vernicia (Aleurites) fordii*

- Small East Asian deciduous tree from spurge family, Euphorbiaceae
- Highly poisonous seeds contain one of the best drying oils, rich (82%) of 3-unsaturated α -eleostearic fatty acid
- Used for finishing wood (especially for musical instruments) and other staining processes

Tung fruits



Castor oil plant, *Ricinus communis*

- African and Indian shrub from spurge family, Euphorbiaceae
- Cultivated as annual in temperate regions
- Seeds are poisonous, but contain (95%) unique castor oil containing hydroxylated ricinoleic oil (unsaturated oil with –OH group)
- Widely used in traditional medicine as laxative, now used in many modern drugs as a component, and also as technical oil for lubrication, making plastics etc.
- In fascist Italy, was widely used for intimidation of Mussolini opponents (oil is not poisonous but in large quantity may be harmful)

Castor plant



Jojoba, *Simmondsia sinensis*

- Shrub of its own family (Simmondsiaceae) native to southern North America
- Name is a result of botanical mistake: botanist J. Link misread label “Calif” as “China”
- Seeds contain unique liquid wax (10°C is a melting point): combination of long-chained fatty acids and fatty alcohols
- Jojoba “oil” is odorless, colorless and oxidatively stable, used as a substitute for sperm whale oil: cosmetics, as stable lubricant (it is not digested for most organisms); and now also as biofuel
- Widely cultivated in Arizona, California and Mexico

Jojoba male flowers



Fruits—and vegetables

- The main “common sense” difference is the low amounts of sugars in vegetables, plus tree origin of fruits
- However, there are multiple exceptions: beet, avocado, plantains etc.
- In addition, pumpkins and relatives (melon, watermelon, squashes) normally treated as separate group
- Morphologically, fruits are fruits (and sometimes seeds like litchi or pomegranate, or riped inflorescences like pineapple or fig), and vegetables are everything else

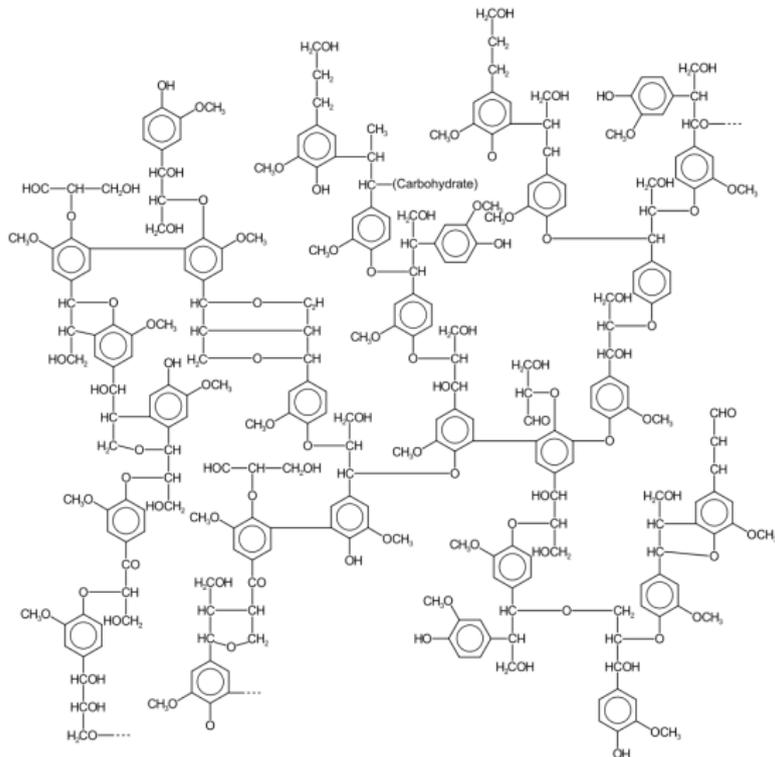
Main components of fruits

- Water
- Dietary fiber
- Sugars
- Organic acids
- Vitamins

Dietary fiber

- Polysaccharides
- Lignin
- Other constituents of plant cell walls (glycoproteins etc.)
- Improve intestinal transit, lowering the risk of colorectal cancer

Lignin



Fruit sugars

- Mostly fructose and its derivatives (kestoses)
- Sweeter 1.7 times more than sucrose, but only at room temperature

Summary

- Photos from Vitko's collection: <http://ifile.it/c8eiwx9>
- Most of fruits are sources of water, sugars, organic acids and plant vitamins

For Further Reading



A. Shipunov.

Ethnobotany [Electronic resource]. 2011—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_310



P. M. Zhukovskij.

Cultivated plants and their wild relatives [Electronic resource].

Commonwealth Agricultural Bureaux, 1962.

Mode of access:

[http://ashipunov.info/shipunov/school/biol_310/
zhukovskij1962_cultivated_plants.pdf](http://ashipunov.info/shipunov/school/biol_310/zhukovskij1962_cultivated_plants.pdf)

Pages 28–74.