

Ethnobotany. Lecture 31

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Outline

- 1 Pharmacognosy
 - Plant remedies for nervous system; stimulants



Results of Exam 3: statistic summary

Summary:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
32.00	54.00	57.00	56.85	64.00	69.00

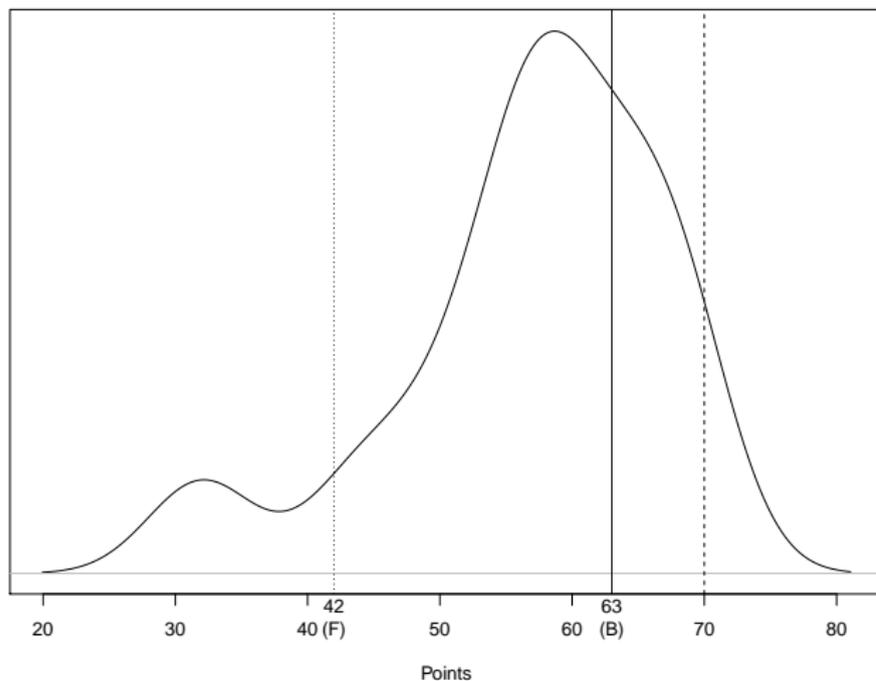
Grades:

F	D	C	B	max
42	49	56	63	70



Results of Exam 2: the curve

Density estimation for Exam 3 (Biol 154)



Pharmacognosy

Plant remedies for nervous system; stimulants



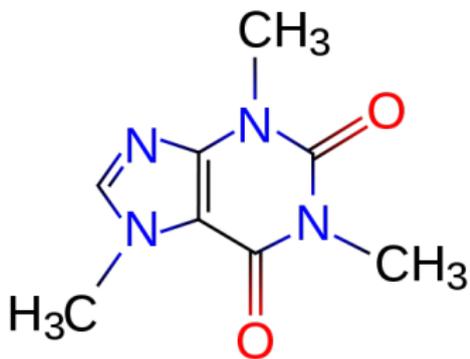
Cola, *Cola* spp., Malvaceae, West Africa

- *Colae semen*
- Tropical tree, seeds contain caffeine and kolanins
- Caffeine is antagonist of adenosine inhibitory receptors and natural insecticide

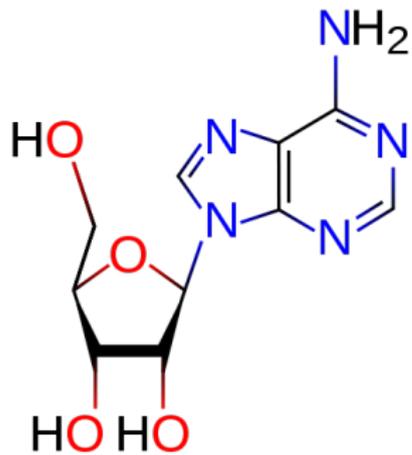


Cola





Caffeine



Adenosine



Caffeinated spiders make wrong webs



Tea, *Camellia sinensis*, Theaceae, East Asia

- Small evergreen shrub
- Native to China, cultivated there from 2500 BC



Tea



Tea facts

- Young leaves and buds are mostly used
- There are fermented (black, pu-ehr, up to 3% of caffeine!) and non-fermented (green) teas
- All contain caffeine and small amounts of theobromine and theophylline



Coffee, *Coffea arabica*, Rubiaceae, East Africa

- Small evergreen tree with regular growth
- Native to Ethiopia, was a local Yemen culture until XVIII century



Coffee



Coffee facts

- Seeds contain up to 2.5% of caffeine
- Most of aromatic compounds (caffeol) are activated when frying



Cocoa, *Theobroma cacao*, Malvaceae, South America

- Evergreen small tree with cauliflory
- Cocoa beans are large fruits which go to cocoa, chocolate and oil production



Cocoa

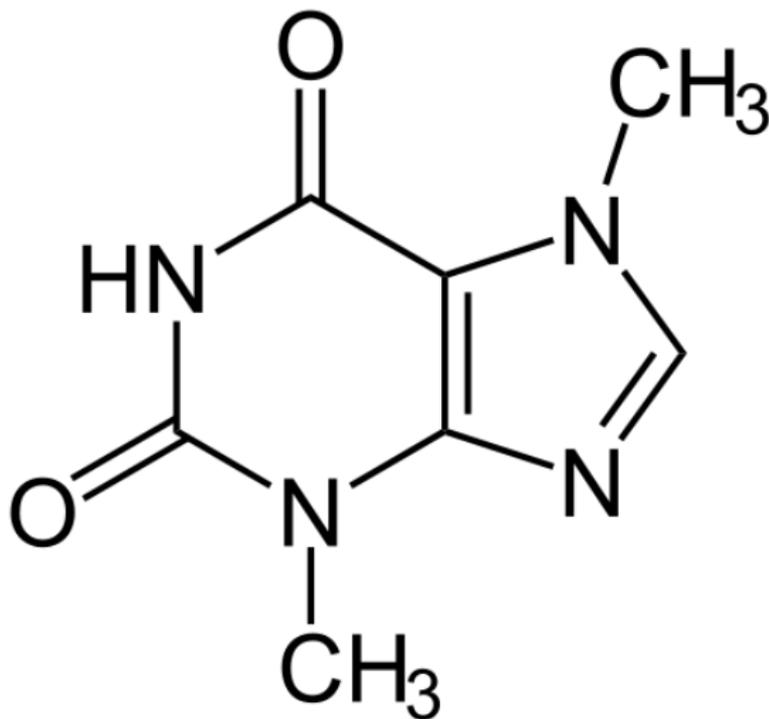


Cocoa facts

- Fermented and fried seeds contain 2% of theobromine
- Phosphodiesterase inhibitor which raises intracellular cAMP
- 43% of world cocoa come from Côte d'Ivoire



Theobromine



Yerba mate, *Ilex paraguariensis*, Aquifoliaceae, South America

- Evergreen shrub from semi-deserts of South America
- Leaves contain up to 2% of caffeine
- Anti-cancer and cancer effects were both stated



Mate



Yerba mate



Guarana, *Paulinia* spp., Sapindaceae, South America

- Tropical shrub with pinnate leaves; seed powder is used as a drink
- Extremely high in caffeine (up to 6%), actually caffeine old name was “guaranine”



Guarana



Summary

- Most of stimulants / narcotics are analogs of neurotransmitters



For Further Reading



A. Shipunov.

Ethnobotany [Electronic resource].

2011—onwards.

Mode of access:

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



M. Heinrich and others.

Fundamentals of pharmacognosy amd phytotherapy (selected chapters). [Electronic resource].

Churchill Livingstone, 2004.

Mode of access: http://ashipunov.info/shipunov/school/biol_310/heinrich2004_fund_pharm_part.djvu

Chapter 16.

