Coffee, pros and cons

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Bachelor’s Thesis, June 2018-2019

AIMS
- To announce the chemical composition of coffee, emphasizing above all on its bioactive compounds and its metabolites.
- To see the positive and negative effects that coffee consumption produces on human health.

**Health effects of caffeine**
- **Positive effects**
  - Reduces symptoms related to Parkinson.
  - Lower risk of CV disease.
  - Potential protective effect in front of cancer disease.
- **Negative effects**
  - Increases CVF.
  - Tolerance development in frequent consumers.
  - Headache, fatigue, mild depression in frequent consumers who leave its consumption.
  - Abortion and bad development of foetus.

**Physiological effects of caffeine**
Antagonist effects over adenosine receptors.

**CAFFEINE**

**Physiological effects of trigonelline**
- Hypoglycemic, neuroprotective, anti-invasive, estrogenic and antibacterial.
- More over, decreases cholesterol ant triglycerides levels, and inhibits the invasion of hepatoma cells.

**TRIGONELLINE**

**Physiological effects of melanoïdins**
- Anticarcinogenic.
- Speed up healing process in cancer disease.
- Anticarcinogenic (against Streptococcus mutans).

**MELANOÏDINS**
Glucose + amino group
Roasting
glycosylamine + \(H_2O\)

**Physiological effects of melanoïdins**
- Anticarcinogenic against \(S.\) mutans.
- Decreases risk of colorectal cancer.
- Microflora growing, \(Prevotella\) over all
- Inhibits microorganisms by:
  - Chelating \(Fe^{3+}\)
  - Eliminating \(Mg^{2+}\) → membrane rupture.

**Physiological effects of diterpenes kahweol and cafestol**
- Increase CV risk, but it’s counteracted by CGAs.

**KAHWEOL AND CAFESTOL**

**Physiological effects of diterpenes kahweol and cafestol**
- Increase LDL cholesterol.
- Regulate Nrf2/ARE transcription factors.

**CGAs**

**Physiological effects of CGA's**
- Antioxidant effect.
- Platelet inhibition and antithrombotic effects.
- Block GLUT 2 or SGLT → Decreases glucose levels.
- Effect on GST and NAD(P)H quinone reductase.
- Inhibits DNA methyltransferase.

**Health effects of CGA's**
- Chemo-preventive agents.
- Reduction of CV risk.
- Anticarcinogenic, inhibiting \(S.\) mutans.
- Potential reduction of Diabetes mellitus type II
- Decreases cholesterol levels.
- Anticarcinogenic effects.

**CONCLUSIONS**
Coffee effects on human health will be associated with a prolonged consumption. The bioactive components are caffeine, CGAs, trigonelline, cafestol, kahweol and melanoïdins.

They have, in vitro, antioxidant, chemo-preventive, antihypertensive, hypoglycemic, antiglycative and anticarcinogenic effects, and as they go through the GIT, except trigonelline, their metabolites are those that enter the bloodstream. Epidemiological studies associate coffee consumption with a lower risk of Diabetes mellitus type II, hepatocellular, endometrial and colorectal cancer, and breast cancer in premenopausal women. The effects on the CV system are contradictory, but it seems that the negative effects of caffeine and diterpenes are counteracted by CGAs. The risk of Parkinson is also decreased in men and in women who have not taken postmenopausal oestrogen.

**MAIN REFERENCES**
