Targeted delivery of dietary flavanols for optimal human cell function: Effects on cardiovascular health

SFRBM Annual Meeting, Pre-meeting Workshop II
Flavanols in Health and Disease

Flavanols and Cardiovascular Health: Current Perspectives

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Correlations in epidemiology

Diets rich in plant foods are strongly associated with a decreased risk in cardiovascular disease.
Targeted delivery of dietary flavanols for optimal human cell function: Effect on cardiovascular health
FLAVIOLA aims at:

(i) illuminating the **cellular and sub-cellular effects** of flavanols and their main human metabolites;

(ii) investigating key parameters of dietary **flavanol absorption**, clearance and efficacy towards surrogate markers of **cardiovascular function** in humans;

(iii) **developing innovative, functional, and nutritionally responsible food matrices** for optimised dietary flavanol delivery;

(iv) and finally demonstrating **cardiovascular benefits and safety** for a newly developed prototype food product.
WP 1/2
- metabonomics
- targeted delivery
- intra- & inter-variability

processing and formulation

optimised matrices

intra- & inter-variability

nutrient-nutrient interactions

metabolism
Early dietary intervention studies

**Blood Pressure**
- Taubert et al, JAMA, 2003;290(8):1029-30

**Endothelial Function**
- Heiss et al, JAMA, 2003;290(8):1030-1

**Platelet Reactivity**
Dietary Flavonoids
- Potential Mechanisms (I) -

Heiss, Keen, Kelm, Eur Heart J. 2010;31(21):2583-92
Dietary Flavonoids
- Potential Mechanisms (II) -

Heiss, Keen, Kelm, Eur Heart J. 2010;31(21):2583-92

* Human studies
† Human ex vivo
# Animal studies
‡ In vitro studies
Dietary Flavonoids
- Potential Mechanisms (III) -

Del Rio, ..., Crozier

Antioxid Redox Signal. 2012, in press
Scientific Rigor of Flavanol-related Research **in general**, and what **Flaviola** aims for:

- Poorly characterized materials
- No or insufficient controls
- Low-rigor biomedical endpoints & study designs;

- Well characterized/Standardized Materials
- Fully matched controls
- Relevant Endpoints Double-blind Mechanistic Insight