D3.3
Evidence for the human health benefits of fresh fruit in validated human digestion, bioavailability and disease model systems (P1, P3, P4)

Results of P1 GROUP

- **Study I:** Protective effect of Sveva strawberry polyphenol-rich extract against oxidative stress inducted by AAPH on human dermal fibroblasts.

- **Study II**: Effects of two different strawberry cultivars (Adria and Sveva) against doxorubicin (DOX)-induced toxicity in rats.

- **Study III**: Effect of 500 g/day of Alba strawberries supplementation for 1 month on 23 healthy volunteers.

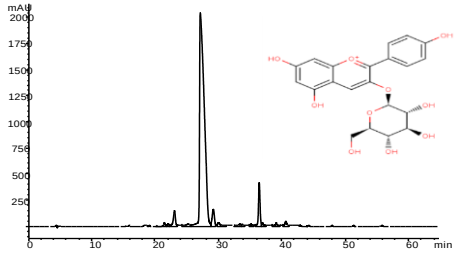
STUDY I

Anthocyanin-rich strawberry extract protects against oxidative stress damage and improves mitochondrial functionality in human dermal fibroblasts exposed to oxidant agent.

Submitted

Francesca Giampieri, José M. Alvarez-Suarez, Luca Mazzoni , Tamara Y. Forbes-Hernandez, Massimiliano Gasparrini, Ana M. Gonzàlez-Paramàs, Celestino Santos-Buelga, Josè L. Quiles, Bruno Mezzetti, and Maurizio Battino

HPLC-DAD-MS analysis

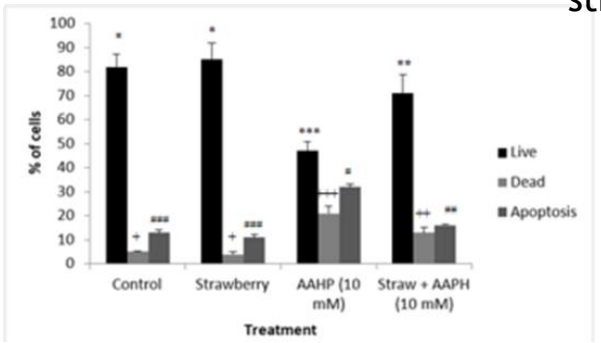


- *High content of phenolic compounds*
- *Relevant total antioxidant capacity*

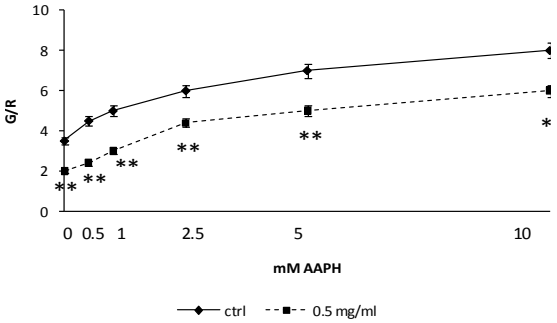
Incubation for 24 h with strawberry extract

AAPH induced stress

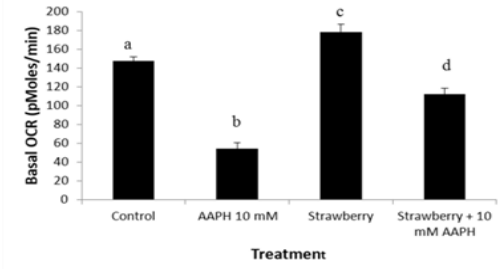
Cell viability



Lipid peroxidation



Mitochondrial performance



STUDY II

Doxorubicin-Induced Oxidative Stress in Rats Is Efficiently Counteracted by Dietary Anthocyanin Differently Enriched Strawberry (*Fragaria x ananassa* Duch.)

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY
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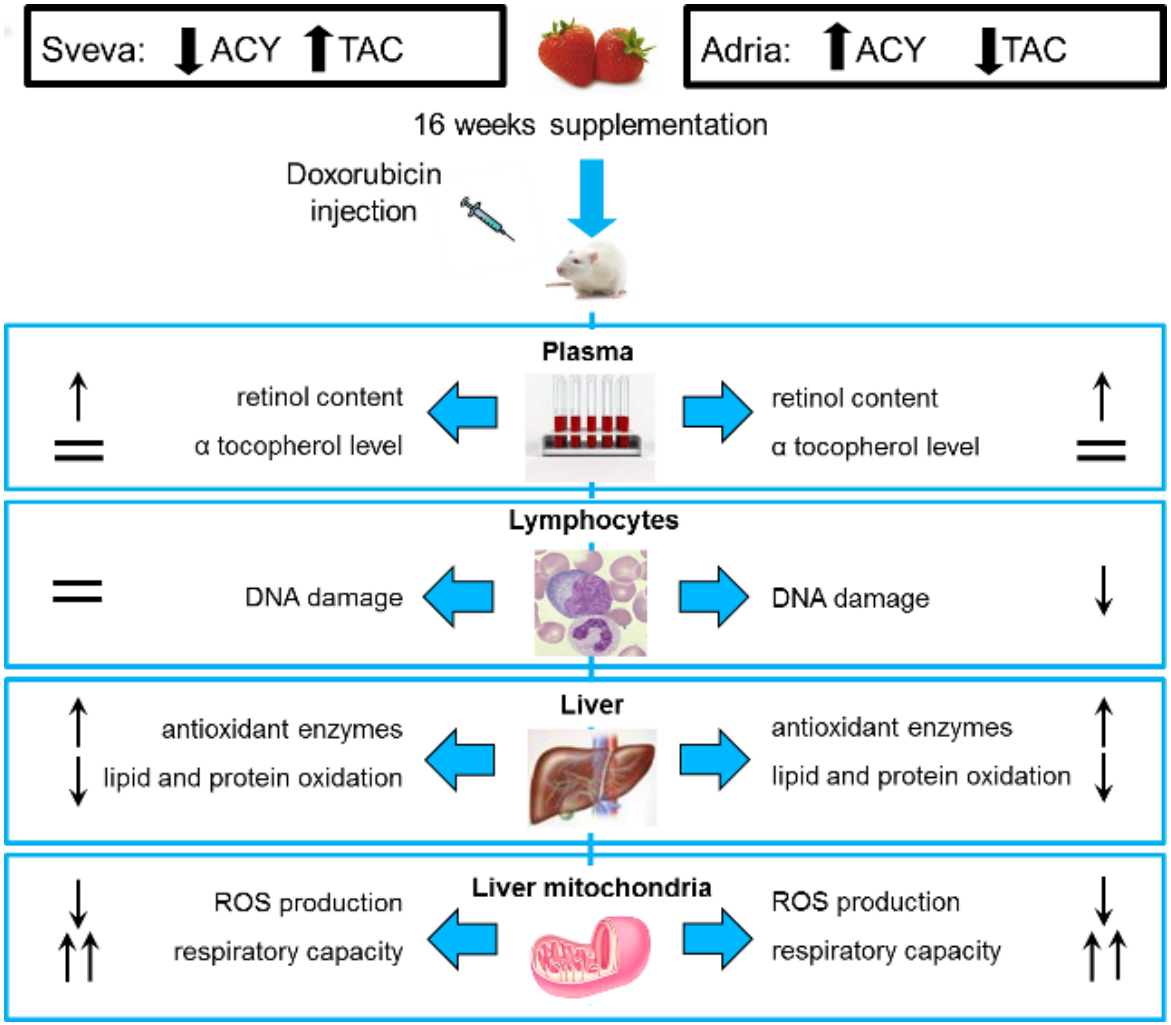


STUDY III

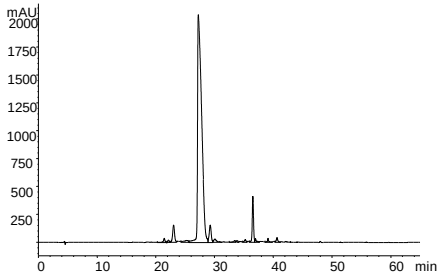
One-month strawberry-rich anthocyanin supplementation ameliorates cardiovascular risk, oxidative stress markers and platelet activation in humans

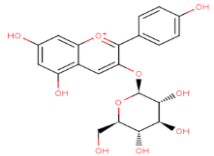
Journal of Nutritional Biochemistry

Journal of Nutritional Biochemistry 25 (2014) 289–294

José M. Alvarez-Suarez[a], Francesca Giampieri[a,b], Sara Tulipani[c], Tiziana Casoli[d], Giuseppina Di Stefano[e], Ana M. González-Paramás[f], Celestino Santos-Buelga[f], Franco Busco[g], Josè L. Quiles[h], Mario D. Cordero[i], Stefano Bompadre[j], Bruno Mezzetti[b], Maurizio Battino[a,*]

HPLC-DAD-MS analysis





Pelargonidin-3-glucoside

- High content of pelargonidin-3-glucoside
- Relevant total antioxidant capacity
- High content of Vitamin C

Biomarkers of oxidative stress

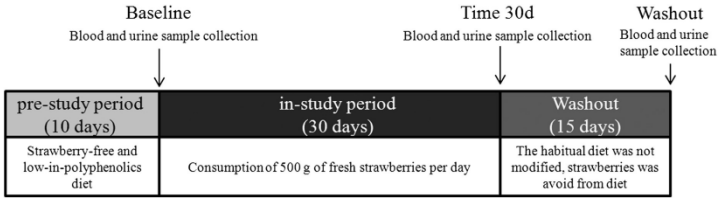
↑ FRAP, ORAC, Vit C

= Uric Acid

↓ MDA, 8-OHdG, Isoprostane

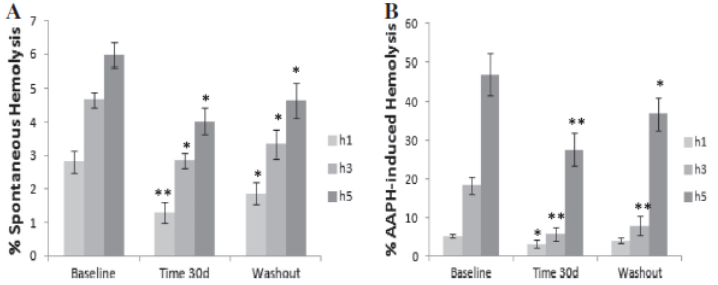
Lipid profile

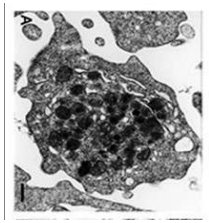
↓ TC, LDL-C, TG



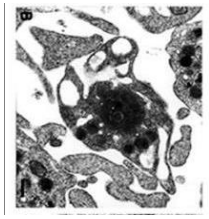
AFTER STRAWBERRY INTAKE

Significant reduction of spontaneous and oxidative hemolysis compared to the baseline point, which remained stable after the washout period.

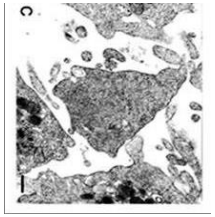




A) Resting platelet



B) Central clustering platelets



C) Degranulated platelets

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Dr. Massimiliano Gasparrini
Dr. Tamara Y. Forbes Hernandez

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Dr. Nevena V. Radanjic
Dr. Natasa D. Petronijevic