Fruitflow®: harnessing the antiplatelet compounds of tomato fruit

Dr Niamh O’Kennedy c/o The University of Aberdeen, Rowett Institute of Nutrition and Health, UK.
Dr Daniel Raederstorff, Principal Scientist, DSM Nutritional Products, Switzerland.

Introduction

Observations by ourselves and others (Yamamoto et al, 2003; Lazarus et al, 2003, 2004) have suggested that observed cardiovascular benefits attributed to the tomato may be linked to naturally occurring antiplatelet components (Dutta-Roy et al, 2001, O’Kennedy N et al, 2006a, b). Tomato antiplatelet components are water-extractable, and include nucleosides and nucleotides, flavonoids, phenolic acids and esters and amino acid-sugar conjugates (Fig 1).

We have demonstrated their differing effects on key pathways of platelet aggregation in vitro (Fig 2, Fig 3).

The effects on platelet function of Fruitflow® (FF), a specifically designed tomato extract, was evaluated in several human intervention studies.

Efficacy studies

The onset of the antiplatelet effect is seen within the first 3 hours after ingestion of a single dose and is dose dependent (Fig 4a, Fig 4b).

The duration of the effect of a single dose (Fig 5) varies between 12 and 18 hours after 18 hours platelet function returned to baseline in all subjects tested.

In chronic studies a sustained effects over 24 hours was observed after 2 and 4 weeks of supplementation with FF. Thus, when taken regularly every day the antiplatelet activity of FF is continuously present (Fig 6).

No effects on clotting time were observed making it safe in relation to bleeding risk. No side effects were reported in the studies.

The suitability of FF for inclusion in different matrices and the efficacy of liquid and powder formats were demonstrated in additional studies.

Conclusions

Lycopene free FF studies have shown that some of the cardiovascular benefits of tomato consumption may relate to antiplatelet activities of its components.

The range of studies on mechanism of action, efficacy and viability as a food ingredient led to awarding of an EFSA health claim to FF (EFSA Journal, 2009), reflecting the robustness of the data and the considered importance of dietary antiplatelets for maintaining health.

The ingredient is in full commercial development, is GRAS and non-Novel and is now sold across the world.

References:

Scientific Opinion: