

Fruitflow®

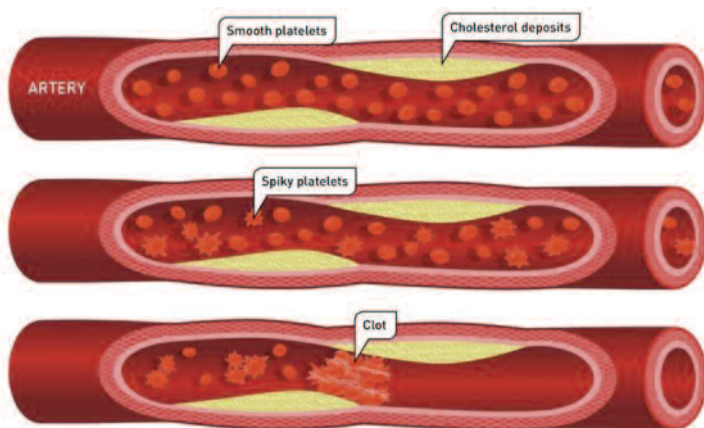
Health benefit solution



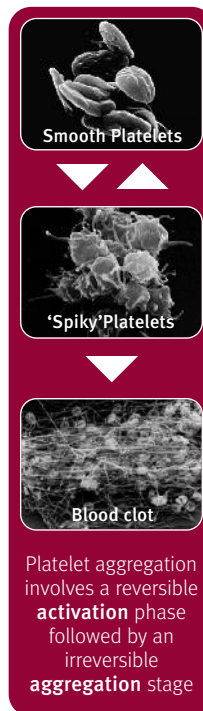
What is Fruitflow®

Fruitflow® is a breakthrough ingredient – the first natural, scientifically substantiated solution contributing to healthy blood flow. In ten human trials, consumption of Fruitflow® has been proven to maintain healthy platelet aggregation and improve blood flow. The effect takes place within 1.5 hours and lasts for 12 to 18 hours. When taken regularly on a once per day basis, the effect is continuous, making it ideal for use in functional foods or dietary supplements.

Mechanism of Action



- Platelets can become 'spiky' i.e. more prone to clotting in normal daily life due to a variety of factors such as stress, overweight, high cholesterol and also sports.
- Fruitflow® works by keeping blood platelets smooth to avoid aggregation inside blood vessels.
- Fruitflow® does not disrupt the blood clotting process required following injury.



fruitflow®

- First ingredient with an approved EFSA article 13.5 health claim
- Fruitflow® is the first natural, scientifically substantiated solution that contributes to healthy blood flow
- Strong scientific evidence
 - 8 clinical studies
 - Works in 97% of subjects in published studies
- Natural, healthy and safe ingredient
- Forms available for use in food, beverages and dietary supplements applications
- Highly stable and water-soluble, low flavour, odour and colour profile
- Strong differentiation for heart health products (opportunity to create new segment in the category)
- Builds on established consumer awareness around cholesterol and other heart health solutions

Cardiovascular health

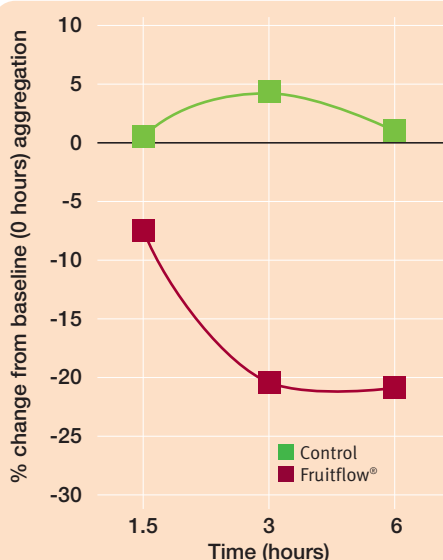
There are three major risk factors in cardiovascular health: increased cholesterol, high blood pressure and increased platelet aggregation. Fruitflow's proprietary technology creates currently the only functional food ingredient addressing platelet aggregation.

Efficacy and safety

Fruitflow® was discovered by Professor Asim Duttaroy at the Rowett Research Institute in Aberdeen in 1999. Since then, Fruitflow's effectiveness has been tested in ten different studies on healthy volunteers.

- Healthy platelet aggregation was maintained; platelets became less activated or 'smoother' after consuming a food, beverage or dietary supplement containing Fruitflow®.
- Effective in 97% of subjects tested in published studies.
- Safety has also been confirmed in multiple human studies.
- No side effects have been reported; no adverse effects from prolonged intake, no allergic reactions and, no increased bleeding risk even for people under medication of blood thinning agents.

Onset and duration of in vivo anti-platelet effect



O'Kennedy et al, 2006a AJCN 84, 561-9

Study design

- Randomized, placebo-controlled, single-blinded study design.
- 23 normal healthy subjects (40 – 65 years) completed the study.
- Blood samples were collected at baseline, 1.5, 3 and 6 hours.

Results

- Onset of antiplatelet effect seen within 1.5 hours after ingestion – measured as a significant difference from baseline platelet function.
- Duration of effect variable, but after 18 hours platelet function returned to baseline in all subjects tested.

Claims

Fruitflow's strong science has been evaluated by the European Food Safety Authority and granted the first approved article 13.5 (proprietary) health claim:

"Fruitflow® helps maintain normal platelet aggregation, which contributes to healthy blood flow"

Depending on the local regulatory requirements and interpretation, claim wording might be modified.

Composition

Fruitflow® is a water-soluble, tomato-based concentrate developed in two variant forms named Fruitflow® I (water-soluble syrup) and its sugar-free derivative Fruitflow® II, supplied in powder format. These two products are prepared from tomato extract using patented processes and are intended for use as nutritional ingredients for food, beverages and dietary supplements. Chemical specifications of the active constituents are provided and batch to batch reproducibility has been demonstrated. Both Fruitflow® forms are standardized on 3 bioactive fractions.

Applications and dosage

Fruitflow® I performs well in most food and beverage applications, such as juice-based and water-based beverages, as well as dairy applications with a recommended dosage of 3 grams.

Fruitflow® II is being developed for use in dietary supplements, with a recommended dosage of 150 mg.

Contact your DSM representative for specific application details and Fruitflow® II availability.



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