COMPARISON OF LEVELS OF ANTIPLATELET BIOACTIVE COMPOUNDS IN TRADITIONAL TOMATO PRODUCTS WITH THOSE IN A TOMATO-BASED SUPPLEMENT WITH AN APPROVED EFSA ANTIPLATELET HEALTH EFFECT

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BACKGROUND

Tomato products (paste, purée, passata, canned, etc) are popular, affordable and versatile ingredients, commonly regarded as healthy.

In 2009, EFSA approved a health claim for Water Soluble Tomato Concentrate (WSTC), a dietary supplement branded as Fruitflow®, made solely from tomato paste. The proven health effect was decreased blood platelet hyperactivity.

Hyperactive blood platelets aggregate together, leading to poor blood flow.

Maintaining healthy blood flow is of critical importance, mitigating health risks associated with cardiovascular diseases (CVD) such as atherosclerosis, thrombosis and hypertension, obesity, pre-diabetes, rheumatic disease as a result of unhealthy lifestyles (unhealthy dietary patterns, smoking, sedentary lifestyle, stress) and pollution.

Many health administrations now accept that widespread daily aspirin therapy for poor blood flow is unsafe for healthy adults.

The study aimed to evaluate and compare levels of more than 37 water-soluble bioactive compounds in a single standard serving of tomato products (polyphenols profile, water-soluble vitamins and nucleophilic substances) with levels of the same bioactive molecules existing in a dose of Fruitflow®.

METHOD

More than 100 commercial tomato product samples (pastes, purees, others), from 18 different processing tomato companies worldwide, were analysed in triplicate for concentrations of antiplatelet bioactive compounds and compared with the Fruitflow® supplement.

Nucleosides/nucleotides content was determined using HPLC-DAD.
Polyphenols content was determined using UHPLC-HRMS/MS.
Statistical analysis was performed using SPSS®.

RESULTS

From the multivariate statistical analyses applied to the data matrix, we determined that servings of the tomato products measured show significantly higher levels of all the water-soluble bioactive molecules (Nucleosides/nucleotides, polyphenols) responsible for decreasing platelet hyperactivity than a dose of the Fruitflow® dietary supplement.

A selection of the **Bioactive compounds*** identified in tomato products and compared to Fruitflow® per serving size (mg).

Nucleosides/Nucleotides

	Fruitflow® 3 capsules (3g)	Tomato paste 1 tablespoon (15g)	Tomato purée 1/2 cup (125g)	Other products 1/2 cup (125g)
Nucleoside A	0.1	1.49	5.05	3.24
Nucleoside B	0.27	2.52	6.20	4.41
Nucleoside C	0.78	2.65	9.68	6.01
Nucleoside D	<0.01	1.66	8.77	3.87
Nucleotide A	4.49	29.46	120.64	114.08

Polyphenols

	Fruitflow® 3 capsules (3g)	Tomato paste 1 tablespoon (15g)	Tomato purée 1/2 cup (125g)	Other products 1/2 cup (125g)
Polyphenol A	0.515	1.49	6.00	6.23
Polyphenol B	0.0015	0.03	0.07	0.07
Polyphenol C	0.0072	0.25	1.04	0.77
Polyphenol D	0.22	2.55	10.67	6.84
Polyphenol E	0.097	1.24	3.99	2.94

	Fruitflow® 3 capsules (3g)	Tomato paste 1 tablespoon (15g)	Tomato purée 1/2 cup (125g)	Other products 1/2 cup (125g)
Polyphenol F	0.018	0.11	0.62	0.37
Polyphenol G	<0.01	0.16	0.80	0.54
Polyphenol H	0.06	1.78	8.39	4.73
Polyphenol I	0.004	0.84	4.62	1.87
Polyphenol J	<0.01	0.59	2.39	1.64

CONCLUSIONS

The study demonstrates that consumption of standard portions of traditional processed tomato products could deliver health benefits for maintaining cardiovascular and heart health by reducing platelet hyperactivity and optimising blood flow.

The next phase of this research is a multi-centre, human nutrition clinical trial.

the tomato foundation
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*Some of the detail in the data remains confidential, pending forthcoming publication.