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Conclusions: Despite the differences, SA met legal and literary standards, indicating the blend's viability as a sucrose substitute in chocolate, in terms of nutrition. Furthermore, SA chocolate can serve as a food special porpose suitable for consumption in reduced-sugar diets.

3.6.3. Native Brazilian Passion Fruit (*Passiflora tenuifila*) Modulates Gene Expression Related with Reverse Cholesterol Transport and Improves Insulin Resistance Biomarkers in Humans

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Background: The Brazilian biodiversity is one of the largest in the world within two global biodiversity hotspots: Atlantic Forest and Cerrado. Brazilian native fruits have been shown to be excellent sources of polyphenols that are associated with multiple biological mechanisms and protection against non-communicable diseases. This study aimed to evaluate the impact of the consumption of *Passiflora tenuifila*, a native species of passion fruit, rich in bioactive compounds, mainly proanthocyanidins, and fibers on hyperlipidemic overweight individuals.

Methods: Men and women (n = 15) were enrolled in a crossover-controlled study of two weeks of *P. tenuifila* or fiber control consumption, with a 1-month-washout-period. In each arm, blood samples were collected from fasting volunteers on days 1 and 15. Biochemical parameters such as glucose, insulin, HOMA IR, total cholesterol, HDL, LDL, triglycerides, and pro-inflammatory cytokines were evaluated. RNA was extracted from PBMC, and transcriptomic analyses were performed using microarrays.

Results: At the biochemical level, *P. tenuifila* consumption significantly decreased values of biomarkers of insulin resistance such as aspartate aminotransferase, insulin, and IL-6. At a molecular level, *P. tenuifila* modulated signaling pathways involved in inflammation, lipid, and glucose metabolism such as toll-like receptor, insulin, PI3K-Akt, and TGF-B. ABCA1 gene was up-regulated in 26%. ABCA1 is a transmembrane protein expressed in many tissues whose main functions are regulating reverse cholesterol transport and insulin signaling. Bioinformatics of the protein-protein interactions and potential transcription factors involved like PPR-alpha and NF-kB corroborate the findings.

Conclusions: *P. tenuifila* consumption demonstrated beneficial effects on insulin resistance biomarkers in hyperlipidemic overweight individuals, and reverse cholesterol transport modulation at a molecular level, being a possible and important tool in the prevention of cardiometabolic disorders.

3.6.4. Omega-3 Supplements. Does the Source Matter?

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Background: The need to adopt a more sustainable diet is driving the research to identify new sources of n-3 LC-PUFAs for the production of supplements, including small crustaceans like krill and Calanus finmarchicus. However, the lipid class composition of oils from lower trophic levels often differs from traditional fish oil supplements.

The aim of the present study was to evaluate if and to what extent bioaccessibility of lipids is modulated by their chemical form. In addition, the impact of encapsulation on bioaccessibility was considered.