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(54) Title: FOOD SUPPLEMENT BASED ON BIOLOGICAL LYCOPENE AND PROCESS TO OBTAIN BIOLOGICAL LYCOPENE

Product	Synthetic Lycopene	Natural Lycopene	Biological Lycopene
Raw material	Synthetic raw materials	Tomato berries (no regulation). Use of OGM, pesticides, phytomedicines, etc., is possible	Certified biological tomato berries. No OGM, pesticides, phytomedicines, etc.
Production technology	Chemical synthesis reactions between synthetic compounds	Tomato extraction with chemical solvents (THF, etc.)	Biological tomato extraction with supercritical CO ₂
Bulk end product	Crystalline. Clean, regular and big crystals. Lycopene: 90-95%. Impurities and chemical solvents	Amorphous and crystalline. Irregular and dirty crystals. Lycopene: 50-60%. Impurities and chemical solvents	Amorphous. Lycopene suspension (1-2%) in tomato Natural Lipids
Bulk end product purification	Mandatory. All different from lycopene are impurities and toxic-harmful chemical solvents	Mandatory. All different from lycopene are impurities and toxic-harmful chemical solvents	Not needed. 100% natural product
Commercial formula	1-10% Dilution, with lipids + other exogen chemical additives	1-10% Dilution, with lipids + other exogen chemical additives	As extracted
Toxicity	Possible presence of impurities and toxic / harmful solvents	Possible presence of impurities and toxic / harmful solvents (pesticides ?)	Absent
Bio-availability	Improved by exogen lipids and other chemical additives	Improved by exogen lipids and other chemical additives	Optimal. Presence of Lutein, poly-unsaturated fat acids, E-vitamin, etc.
Natural	Zero. Completely synthetic product with possible impurities and chemical solvents	Low. Natural product with chemical solvents and exogen chemical additives	Maximum. Only what is present in the tomatoes is extracted, boxing up as it is

(57) Abstract: Innovative food supplement based on biological lycopene, which is the bulk product, i.e. the total extract, obtained by treating with supercritical carbon dioxide a suitable extraction matrix, made by 50% biological tomato berries and 50% biological dry fruits (almonds, nuts and the like) and/or other components, following a co-extractive technology. Tomato berries are conveniently de-hydrated, milled and riddled; the co-extraction matrix (dry fruits, vegetables, others) is conveniently de-hydrated and milled. The obtained total extract is directly used for preparing lycopene based food supplement s, without any modification or addition. With respect to the known commercial food supplement, based on lycopene, such biological lycopene has unique quality features: the total extract is 100% natural; absence of chemical solvents; lycopene concentration in the final natural formula (not artificial); absence dosing problems and contra-indications. In the final product, lycopene is mixed with other natural anti-oxidants, co-extracted from the used vegetables. The boxing up of the bulk product (total extract) is made in soft or hard caps in several shapes and colours or in tablets or in other way (e.g. liquid, others).