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- (54) **ZEAXANTHIN FORMULATIONS FOR HUMAN INGESTION**
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(57) **ABSTRACT**

Preparations are disclosed containing the 3R-3'R stereoisomer of zeaxanthin as a sole detectable isomer, packaged for oral ingestion by humans as a therapeutic drug or nutritional supplement. Zeaxanthin is a yellow carotenoid pigment found in the macula (in the center of the human retina), which helps protect retinal cells against phototoxic damage. The pure R-R stereoisomer can be prepared by fermenting cells, such as *Flavobacterium multivorum* (ATCC 55238), which do not create any detectable quantity of the undesired and potentially toxic S-S or S-R isomers, and which do not synthesize any other carotenoids. The R-R isomer can be concentrated, in large quantities and at low cost, into a viscous oily fluid containing about 5 to 20% zeaxanthin, by means of a simple solvent extraction process. This oily fluid can be mixed with a carrier such as vegetable oil and enclosed within a digestible capsule, comparable to a conventional capsule containing Vitamin E. Alternately, a zeaxanthin fluid can be added to various types of foods, such as margarine, dairy products, syrup, cookie dough, and certain types of meat preparations which are not subjected to harsh cooking. Additional purification steps can also be used to purify zeaxanthin to a granular or powdered state which contains nearly pure zeaxanthin. Such processing can be used to create formulations such as ingestible tablets, and particulate formulations that can be added to soups, salads, drinks, or other foods. Preferred stabilizers and anti-oxidants are also disclosed herein. When consumed by humans in any of these modes, the purified R-R stereoisomer of zeaxanthin can help treat and prevent macular degeneration, one of the leading causes of blindness and vision loss, especially among the elderly.

Related U.S. Patent Documents

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- (58) **Field of Search** 424/451, 455, 424/463, 464, 474, 489, 93 R, 93 A, 93 D; 426/61, 89, 103, 807, 549, 550, 556, 574, 581, 582, 583, 586, 587, 590, 599, 603, 648, 652, 653, 655

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