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United States Patent [19][11] **Patent Number:** **6,022,701****Boussiba et al.**[45] **Date of Patent:** **Feb. 8, 2000**[54] **PROCEDURE FOR LARGE-SCALE PRODUCTION OF ASTAXANTHIN FROM HAEMATOCOCCUS**[75] Inventors: **Sammy Boussiba, Omer; Avigad Vonshak, Midreshet Sede-Boker; Zvi Cohen, Omer; Amos Richmond, Midreshet Sede-Boker, all of Israel**[73] Assignee: **Ben-Gurion University of the Negev Research and Development Authority, Beer-Sheva, Israel**[21] Appl. No.: **09/117,497**[22] PCT Filed: **Jan. 30, 1997**[86] PCT No.: **PCT/IL97/00042**§ 371 Date: **Jul. 30, 1998**§ 102(e) Date: **Jul. 30, 1998**[87] PCT Pub. No.: **WO97/28274**PCT Pub. Date: **Aug. 7, 1997**[30] **Foreign Application Priority Data**

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[51] Int. Cl. **C12P 23/00**[52] U.S. Cl. **435/67; 435/257.1**[58] Field of Search **435/67; 257.1**[56] **References Cited****FOREIGN PATENT DOCUMENTS**

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A process for cultivating *Haematococcus* for the large scale production of astaxanthin-enriched *Haematococcus* cells comprises: (a) cultivating said *Haematococcus* cells under conditions suitable for optimal vegetative growth of said cells, wherein said conditions comprise growing the cells under a light intensity in the range of about 30-140 $\mu\text{mol photons}\cdot\text{m}^{-2}\cdot\text{S}^{-1}$ and at a temperature of between about 15-28° C.; and (b) collecting the cells grown according to (a) and cultivating them further under conditions suitable for optimal induction and accumulation of astaxanthin in said cells, wherein said conditions comprise inoculating said cells of (a) into a growth solution containing essentially a carbon source and growing said cells at a temperature of below 35° C.

17 Claims, 2 Drawing Sheets

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