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(71) Applicant: VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY [US/US]; 301 Burruss Hall, Blacksburg, VA 24061 (US).

(72) Inventor: WEN, Zhiyou; 3701 Bridgeport Drive, Ames, IA 50010 (US).

(74) Agent: CUPAR, David, B.; c/o McDonald Hopkins LLC, 600 Superior Avenue, East, Suite 2100, Cleveland, OH 44114 (US).

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[Continued on next page]

(54) Title: PRODUCTION OF OMEGA-3 FATTY ACIDS FROM CRUDE GLYCEROL

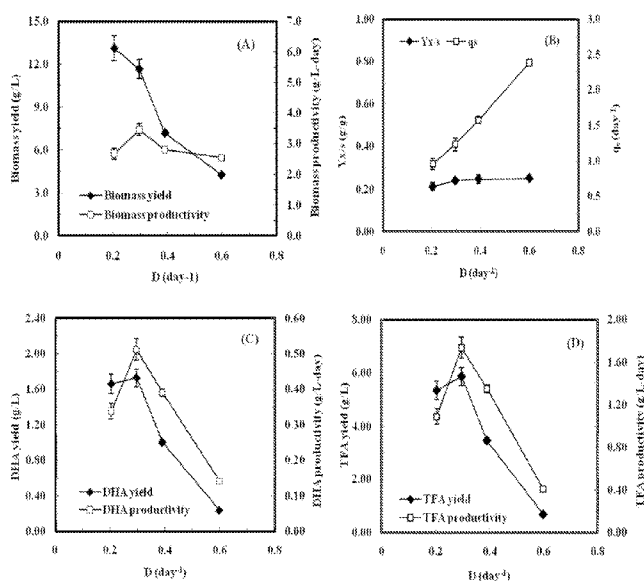


FIG. 1

(57) Abstract: The present invention relates to various methods to produce a variety of omega-3 fatty acids from various species of alga using crude glycerol as a substrate for algal growth. In one embodiment, the present invention relates to various methods to produced docosahexaenoic acid (DHA) from a *Schizochytrium*, *Phaeodactylum*, *Thraustochytrid*, *Ulkenia*, and/or *Labyrinthulea* species of alga. In another embodiment, the present invention relates to various methods to produced eicosapentaenoic acid (EPA) from a *Schizochytrium*, *Phaeodactylum*, *Thraustochytrid*, *Ulkenia*, and/or *Labyrinthulea* species of alga. In one instance, the methods of the present invention utilize crude glycerol as at least a portion of the culture medium for the various micro-organisms disclosed herein to enable the production of one or more omega-3 fatty acids. In one embodiment, the crude glycerol of the present invention can be generated from a biodiesel process as a substrate for the production of either docosahexaenoic acid (DHA) or eicosapentaenoic acid (EPA).



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B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8): A23D 9/00; C12P 7/64; C12N 1/12; CPC: C12P 7/6472, 7/6427, 7/6463; C07C 57/03; A01H 5/10; C12N 1/12; A01G 33/00; USPC: 554/224, 223.1; 435/257.1, 134, 132, 41 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); Google; Google Scholar; Dialog ProQuest; Entrez Pubmed; 'crude waste glycerol,' biomass, 'docosahexaenoic acid (DHA),' 'eicosapentaenoic acid (EPA),' methanol, soaps, 'Phaeodactylum tricornutum,' 'Schizochytrium limacinum'		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	ATHALYE, SK, Production Of Eicosapentaenoic Acid From Biodiesel Derived Crude Glycerol Using Fungal Culture. 07 July 2008. Master's Thesis Abstract; downloaded from the internet on 01 November 2014 from <http://vtechworks.lib.vt.edu/handle/10919/34082>; paragraphs 1-3.	12, 15, 16, 18, 20, 21, 30, 31, 33, 35, 36 ----- 1-11, 13, 14, 17, 19, 32, 34, 37
Y	US 2013/0005004 A1 (WEN, Z et al.) January 3, 2013; abstract; paragraphs [0008], [0009], [0016], [0023], [0047]	1-11, 17, 19, 22-29, 32, 34, 37
Y	US 2009/0004219 A1 (KALLENMARETH, IO et al.) January 1, 2009; paragraphs [0019], [0020], [0055], [0129]	2, 3, 13, 14, 22-29
A	US 2009/0209014 A1 (CHI, Z et al.) August 20, 2009; abstract	1-37
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774