Cultures for breeding micro algae

Phaeodactylum tricornutum

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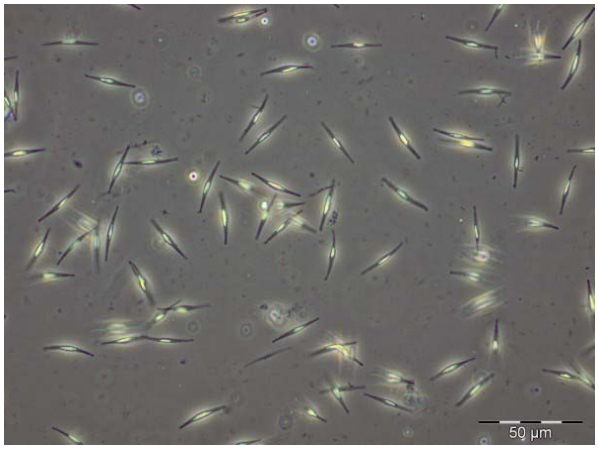

Phaeodactylum tricornutum (phase contrast)

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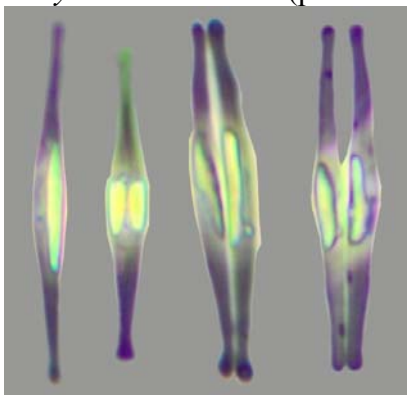

Phaeodactylum tricornutum dividing cycle (phase contrast), from left to right:
1. whole cell
2. cell with divided protoplasm
3. two joind cells
4. two cells nearly divided

Phaeodactylum tricornutum with high density in a 22-liters plankton reactor

Species	*Phaeodactylum tricornutum*
Class	Bacillariophyceae (diatoms)
General description	pennate diatom
Size	25 µm long, 2,5 µm wide; very uniform size: e.g. 25,02 +/- 1,02 (n=19)
Ingredients	Lipids (indication in % of total lipid concentration): C16:1 29,2% (YONGMANITCHAL & WARD 1992a) C16:0 14,5% (YONGMANITCHAL & WARD 1992a) C16:4 8,3% (YONGMANITCHAL & WARD 1992a) C14:0 5,6% (YONGMANITCHAL & WARD 1992a) C20:5 EPA 25,2% (YONGMANITCHAL & WARD 1992a), 35,0-35,2%

	(YONGMANITCHAL & WARD 1992b), 40% (ARCHER 2004); 2,2% of dry mass (GARCIA 2000); 27-30% resp. 2.6-3,1% of dry mass (SANCHEZ et al. 2003) C22:6 DHA 14.1% (ARCHER 2004)
Colour of culture	brown
Effort of cultivation	low
Characteristic of cultivation	easy to cultivate; will overgrow very rapidly other cultures copper toxicity: 0.1 mg reduces growth by 50%; 1 mg causes stagnation (CID et al. 1995); very tolerant against iron lack: *P. dactylum* will be inhibited at 10-30 pM Fe (not chelated) similar to *Thalassiosira oceanica* and *Pseudonitzschia* spp., in contrast to *Thalassiosira pseudonan* (needs 50 times more) (ALLEN et al. 2008); is growing faster with addition of 0.1 M Glycerol (mixotrophic), but without enhance the EPA concentration (GARCIA 2000)
Cultivation in	algae aquarium algae tube algae reactor
Lighting	fluorescent lamp, energy saving lamp, daylight, different spectra possible day / night from 10:2 h .... 12:12 h at strong lights protection pigments from DT-cycle (Diadinoxanthin/Diatoxanthin), VAZ-cycle (Violaxanthin/Antheraxanthin/Zeaxanthin) and CE-cycle (ß-Cryptoxanthin/ß-Cryptoxanthin-Epoxid) are fromed (LOHR 2000);
Aeration / circulation	low ... very strong extreme rigid against shear force
CO_2 fertilization	possible (best growth) but not necessary (low effort)
Range of pH value	7.5 ... 8.5
Range of temperature	not too warm
Range of salinity	AquaCare is cultivating at 35/1000, lower salt concentrations are possible (brachish water)
Kind and concentration of medium	algae medium (7:1): 1 ... 100fold
Backup culture	Window seat culture: dilute (divide) every few month with fresh medium; shake it daily shaker culture: dilute (divide) every few month with fresh medium; refrigerator culture: "awake" the culture very carefully: equal temperature minimum 24 h with very low lights, after it supply fresh medium very carefully (1...10fold)
Suitable for	*Brachionus plicatilis* L-type, *Artemia "salina*"