

Tables:

Table 1. The acyl lipid compositions of some algae.

Data taken from Harwood and Jones [14], where original references will be found.

Lipid %	<i>Chattonella antiqua</i>	<i>Dunaliella parva</i>	<i>Acetabularia mediterranea</i>	<i>Chlamydomonas reinhardtii</i>	<i>Chondrus crispus</i>	<i>Fucus vesiculosus</i>
<i>Phosphoglycerides</i>						
Phosphatidylcholine	5	9	tr	-	30	4
Phosphatidylethanolamine	3	-	1	5	2	6
Phosphatidylglycerol	3	6	3	10	8	2
Phosphatidylinositol	1	2	1	2	tr	3
Diphosphatidylglycerol	-	-	-	-	2	5
<i>Glycosylglycerides</i>						
Monogalactosyldiclylglycerol	29	21	37	47	17	15
Digalactosyldiacylglycerol	18	11	20	16	15	11
Sulphoquinovosyldiacylglycerol	29	7	20	7	16	22
<i>Ether Lipids</i>						
Diacylglycerol trimethylhomoserine	6	15	20	16	-	-
Diacylglycerol-2-hydroxymethyl-trimethyl- β -alanine	-	-	-	-	-	24
<i>Non-polar Lipids</i>	-	15	-	-	3	5
Non-esterified fatty acids	-	13	-	-	2	-

Table 2. Fatty acid composition of selected algae from the SAG culture collection.

The major fatty acids are shown as the % composition recalculated from data in Lang et al 2011 [36] where other compounds (eg phytol) are sometimes listed. 16:1 (9z), 16:2 (9z, 12z), 16:3 (7z, 10z, 13z), 18:1 (9z), *18:1 (11z), 18:2 (9z, 12z), 18:3 (9z, 12z, 15z), 18:4 (6z, 9z, 12z, 15z), 20:4 is ARA, 20:5 is EPA and 22:6 is DHA.

Class	Organism	14:0	16:0	16:1	16:2	16:3	18:0	18:1	18:1	18:2	18:3	18:4	20:4	20:5	20:6
Haptophyceae	<i>Emiliana huxleyi</i>	18.9	10.3				10.8	19.8	22.5			8.7			9.2
	<i>Pavlova lutheri</i>	9.7	20.1	26.3				1.7	3.5	0.5	0.4	9.0		18.2	9.8
Bacillariophyceae	<i>Phaeodactylum tricornutum</i>	4.4	19.2	25.1				8.1	5.5	1.0		1.1	1.3	18.4	1.4
Eustigmatophyceae	<i>Nannochloropsis gaditana</i>		15.2	30.2				5.3			9.2		3.9	35.1	
	<i>Nannochloropsis oculata</i>		20.2	30.9										48.8	
Phaeophyceae	<i>Ectocarpus siliculosus</i>		14.9				15.5			5.8	29.4	10.9	10.4	13.2	
Xanthophyceae	<i>Heterococcus chodatii</i>		10.0	30.6						8.1			18.9	32.6	
	<i>Tribonema vulgare</i>	4.1	13.3	34.4	5.1						10.5		7.1	17.4	
Euglenophyceae	<i>Euglena gracilis</i>	0.9	11.3	1.3	1.7	7.1		3.1	0.7	3.5	19.3		3.8		9.0
Chlorophyceae	<i>Chlamydomonas reinhardtii</i>		19.6	3.8		10.0		14.8	20.4		22.1	5.4			
	<i>Chlorococcum infusionum</i>		45.6		3.7				4.8	32.3		3.1			
	<i>Desmodesmus maximus</i>		30.3					18.0			51.7				
	<i>Dunaliella salina</i>		27.2					10.8	3.7	5.9	35.6				
	<i>Haematococcus pluvialis</i>		16.6					8.3	5.7	31.8	17.1	3.6	1.3	0.8	
	<i>Monoraphidium minutum</i>		17.3	3.0	0.9		6.0	14.4	1.0	6.2	24.0	14.2			
	<i>Scenedesmus obliquus</i>		30.7				23.3	6.8	3.8	7.7	10.6	7.4			
	<i>Tetracystis intermedia</i>		21.3		5.9		22.4	10.6	10.5	21.6	7.6				
	<i>Volvox tertius</i>		34.5	4.0			5.4		15.6		21.7				
Trebouxiophyceae	<i>Chlorella vulgaris</i>		11.3	15.6		9.7		2.9	1.1	24.9	29.5				

	<i>Trebouxia simplex</i>									45.9	34.2				
Ulvophyceae	<i>Halochlorococcum marinum</i>		34.5		7.3	9.1		9.4	18.1	21.3					
	<i>Ulothrix mucosa</i>		37.0			18.5				9.8	27.1	7.3			
Rhodophyceae	<i>Compsopogon hookeri</i>		27.0						14.0	10.7			14.6	33.7	
	<i>Porphyridium purpureum</i>		24.5							23.2			38.9	13.4	
Conjugatophyceae	<i>Cosmarium cucumis</i>		22.0	3.3	1.7			1.6		7.2	19.2	35.5			
	<i>Micrasterias radiata</i>		16.6	2.2		11.8		2.8	2.1	6.7	46.4	3.7			
	<i>Klebsormidium elegans</i>		28.9		9.3					39.5	22.0				

Table 3. Total fatty acid compositions of some algae.

Data taken from Harwood and Jones [14] where original sources are listed. Although the original papers did not always fully define the double bond configuration and position, it can be assumed that these were probably as indicated in **Table 2**, with 16:4 being (6z, 9z, 12z, 15z) and 18:1 being oleic acid, 18:1 (9z). tr = trace (<0.5%).

	Fatty acid composition (% total)										
	16:0	16:1	16:2	16:3	16:4	18:1	18:2	18:3	18:4	20:5	22:6
Fresh water spp											
<i>Scenedesmus obliquus</i>	35	2	tr	tr	15	9	6	30	2	-	-
<i>Chlorella vulgaris</i>	26	8	7	2	-	2	34	20	-	-	-
<i>Chlamydomonas reinhardtii</i>	20	4	1	4	22	7	6	30	3	-	-
Salt-tolerant spp											
<i>Ankistrodesmus spp</i>	13	3	1	1	14	25	2	29	2	1	-
<i>Isochrysis spp</i>	12	6	-	-	15	4	6	17	-	2	13
<i>Nannochloris spp</i>	9	20	7	9	-	4	1	1	-	27	-

Table 4. Total fatty acid composition of some marine algae.

Taken from Harwood and Jones [14]. See **Tables 2** and **3** for information about the unsaturated fatty acids. tr = Trace (<0.5%).

		Fatty acid composition (% total)												
		14:0	16:0	16:1	16:2	16:3	16:4	18:1	18:2	18:3	18:4	20:4	20:5	22:6
Phytoplankton	<i>Monochrysis lutheri</i> (Chrysophyceae)	10	13	22	5	7	1	3	1	tr	2	1	18	7
	<i>Olisthodiscus spp</i> (Xanthophyceae)	8	14	10	2	2	1	4	4	6	18	2	19	2
	<i>Lauderia borealis</i> (Bacillariophyceae)	7	12	21	3	12	1	2	1	tr	-	1	3	-
	<i>Amphidinum carterae</i> (Dinophyceae)	3	24	1	1	tr	-	5	1	2	15	-	14	25
	<i>Dunaliella salina</i> (Chlorophyceae)	tr	41	15	tr	-	-	11	8	19	-	-	-	-
	<i>Hemiselmis brunescens</i> (Cryptophyceae)	1	13	3	3	tr	tr	2	tr	9	30	tr	14	-
Macroalgae	<i>Fucus vesiculosus</i> (Phaeophyceae)	-	21	2	tr	-	tr	26	10	7	4	15	8	-
	<i>Chondus crispus</i> (Rhodophyceae)	-	34	6	tr	-	-	9	1	1	4	18	22	-
	<i>Ulva lactuca</i> (Chlorophyceae)	1	18	2	tr	1	18	9	2	17	24	1	2	tr

Table 5. Very long chain PUFA produced by different algae of industrial interest. For further details see [527].

Species		VLCPUFA accumulated
<i>Emiliana huxleyi</i>	Haptophyceae	18:4n-3, 18:5n-3, DHA
<i>Lobosphaera incisa</i>	Trebouxiophyceae	ARA
<i>Monodus subterraneus</i>	Eustigmatophyceae	EPA
<i>Nannochloropsis spp.</i>	Eustigmatophyceae	EPA
<i>Odontella aurita</i>	Mediophyceae	EPA, DHA
<i>Pavlova spp.</i>	Haptophyceae	EPA, DHA
<i>Phaeodactylum tricorutum</i>	Bacillariophyceae	EPA, DHA
<i>Porphyridium purpureum</i>	Rhodophyceae	ARA, EPA

Table 6. Comparison of the fatty acid composition of *Cryptocodinium cohnii* and *Schizochytrium sp.* and commercial oils produced from them. Taken from information in [35].

Fatty Acid	Content (%)			
	<i>C.cohnii</i>		<i>Schizochytrium</i>	
	Cells	Oil	Cells	Oil
12:0	3-5	2-5	tr	tr
14:0	14-16	10-15	9-15	8
16:0	10-14	10-14	24-28	22
16:1	2-3	1-3	tr	tr
18:0	tr	0-2	Tr-1	1
18:1	9-10	10-30	tr	1
20:5 (n-3)			tr	2
22:6 (n-6)			11-14	17
22:6 (n-3)	50-60	40-45	35-40	41