เอกสารอ้างอิง

วิเศษ ชมเดช และ วัฒนา ภู่เจริญ, 2522, การเพาะเลี้ยงชายฝั่งในประเทศไทย, เอกสารรายงาน/คำแนะนำ กองประมงน้ำกร่อย กรมประมง.

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วีระวัฒน์ หงสกุล, 2522, การเลี้ยงหอยของไทย, เอกสารเผยแพร่ฉบับที่ 12 กองประมงทะเล กรมประมง.

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ภาคผนวก

1. ข้อมูลการวัด Optical density จากการทดลอง, น้ำหนักหอย และผลจากการคำนวณ อัตราการกรองของหอยสองฝา 5 ชนิด

O.D.	= Optical Density
W	= น้ำหนักเปียกของหอยทดลอง (กรัม)
F	= อัตราการกรอง/น้ำหนัก 1 กรัม
C_o	= ความเข้มข้นเริ่มต้น
E_t	= ความเข้มข้นเมื่อผ่านไป 1 ช.ม. ของโหล Control
E_1, E_2, E_3	= การทดลองที่ 1, 2, 3 ตามลำดับ

Donax faba

	Neutral Red			Chlorella A.			Chlorella T			C. calcitran		
	O.D.	W	F	O.D.	W	F	O.D.	W	F	O.D.	W	F
	C_0	.11			.048			.04			.044		
	E_t	.11			.045			.04			.042		
17°c	E_1	.097	2.58	.098	.038	4.00	.085	.029	3.55	.181	.030	3.7	.200
	E_2	.096	3.02	.090	.040	3.40	.069	.029	3.10	.207	.033	3.0	.161
	E_3	.091	2.70	.141	.039	3.45	.083	.028	3.61	.198	.030	3.32	.203
	C_0	.13			.05			.047			.058		
	E_t	.13			.049			.045			.056		
20°c	E_1	.103	3.4	.137	.032	2.8	.304	.028	3.35	.283	.026	3.6	.445
	E_2	.102	3.3	.147	.034	2.8	.261	.027	3.60	.283	.029	3.5	.376
	E_3	.103	3.4	.137	.032	3.31	.257	.029	3.76	.234	.030	3.3	.378
	C_0	.129			.04			.05			.058		
	E_t	.129			.04			.05			.057		
25°c	E_1	.085	3.2	.261	.02	2.4	.578	.039	2.7	.184	.025	3.45	.478
	E_2	.084	3.2	.268	.02	2.35	.590	.030	3.2	.319	.025	3.60	.458
	E_3	.089	3.1	.239	.02	2.35	.590	.032	3.2	.279	.020	3.64	.575
	C_0	.13			.05			.04			.05		
	E_t	.13			.049			.04			.049		
30°c	E_1	.098	2.9	.195	.03	3.50	.280	.013	3.5	.643	.005	3.6	1.268
	E_2	.11	2.4	.139	.033	3.50	.226	.014	3.55	.592	.008	3.6	1.007
	E_3	.098	3.7	.153	.032	3.20	.267	.013	3.5	.643	.01	3.5	.908
	C_0	.12			.052			.04			.055		
	E_t	.12			.050			.038			.054		
35°c	E_1	.094	3.3	.148	.034	3.0	.257	.014	3.7	.540	.01	3.65	.924
	E_2	.095	3.0	.155	.036	2.9	.227	.01	3.75	.712	.015	3.20	.801
	E_3	.096	3.2	.139	.034	2.64	.291	.017	3.70	.435	.013	3.00	.949
	C_0	.12			.05			.04			.05		
	E_t	.12			.045			.038			.049		
38°c	E_1	.105	2.4	.111	.03	4.1	.198	.02	3.7	.347	.013	3.5	.758
	E_2	.100	3.45	.106	.028	3.7	.256	.019	3.9	.355	.013	3.65	.727
	E_3	.102	3.40	.096	.03	4.05	.200	.019	3.94	.352	.012	3.35	.840

Paphia undulata

		Neutral Red			Chlorella A			Chlorella T			Chaetoceros		
		O.D.	W	F	O.D.	W	F	O.D.	W	F	O.D.	W	F
	C_0												
	E_t												
17°c	E_1		0			0			0		0		
	E_2												
	E_3												
	C_0	.128			.06			.05			.055		
	E_t	.128			.06			.048			.055		
20°c	E_1	.124	5.7	.011	.055	7.1	.025	.042	7.5	.036	.051	9.1	.017
	E_2	.123	6.8	.012	.055	6.4	.027	.045	9.6	.013	.053	8.9	.008
	E_3	.121	6.3	.018	.056	6.8	.020	.045	8.3	.016	.053	8.5	.008
	C_0	.13			.058			.048			.04		
	E_t	.13			.058			.046			.039		
25°c	E_1	.11	5.9	.057	.054	6.7	.021	.036	6.74	.073	.032	6.2	.064
	E_2	.115	5.3	.046	.054	7.4	.019	.038	6.2	.062	.032	5.6	.071
	E_3	.11	6.0	.056	.053	6.9	.026	.040	5.2	.054	.034	5.0	.055
	C_0	.125			.05			.058			.058		
	E_t	.125			.055			.054			.056		
30°c	F_1	.08	4.6	.194	.032	5.5	.197	.03	6.3	.187	.038	5.9	.131
	E_2	.075	6.1	.167	.032	5.9	.184	.025	8.0	.193	.035	6.7	.140
	E_3	.073	5.8	.185	.031	6.0	.191	.028	7.8	.168	.035	6.0	1.57
	C_0	.13			.05			.045			.05		
	E_t	.13			.048			.045			.048		
35°c	E_1	.114	7.5	.035	.038	7.0	.067	.038	7.6	.044	.03	7.6	.125
	E_2	.114	6.1	.043	.038	8.2	.057	.038	6.9	.049	.029	6.6	.153
	E_3	.113	7.6	.037	.042	6.5	.041	.037	8.2	.048	.028	7.2	.150
	C_0												
	E_t												
38°c	E_1		-			-			-			-	
	E_2												
	E_3												

Anadara granosa

		Neutral Red			Chlorella A			Chlorella T			Chaetoceros		
		O.D.	W	F	O.D.	W	F	O.D.	W	F	O.D.	W	F
17°c	C_0												
	E_t		0			0			0			0	
	E_1												
	E_2												
	E_3												
20°c	C_0	.10			.041			.056			.06		
	E_t	.10			.041			.056			.06		
	E_1	.079	9.5	.050	.039	8.8	.011	.054	9.8	.007	.059	9.0	.004
	E_2	.079	9.5	.050	.040	7.1	.007	.054	8.5	.009	.059	7.6	.004
	E_3	.074	12.2	.049	.040	6.5	.008	.054	8.8	.008	.059	6.8	.005
25°c	C_0	.13			.053			.045			.058		
	E_t	.13			.052			.045			.058		
	E_1	.102	7.2	.067	.044	6.8	.049	.04	4.7	.050	.055	4.7	.023
	E_2	.102	6.5	.075	.044	6.0	.056	.04	5.2	.045	.052	4.8	.046
	E_3	.095	7.9	.079	.044	5.6	.060	.04	5.8	.041	.055	4.2	.025
30°c	C_0	.125			.041			.058			.048		
	E_t	.125			.039			.056			.046		
	E_1	.094	8.3	.069	.024	8.9	.109	.038	8.3	.093	.035	6.2	.088
	E_2	.091	7.3	.087	.023	10.4	.102	.032	13.4	.084	.030	6.9	.124
	E_3	.094	6.1	.093	.020	11.7	.114	.042	7.3	.079	.032	7.4	.098
35°c	C_0	.12			.06			.04			.058		
	E_t	.12			.058			.04			.058		
	E_1	.078	8.5	.101	.036	6.5	.147	.032	5.2	.086	.038	5.8	.146
	E_2	.084	7.4	.096	.035	8.3	.122	.029	5.0	.129	.040	6.6	.113
	E_3	.084	6.3	.113	.036	9.5	.100	.030	5.4	.107	.036	9.7	.098
38°c	C_0	.12			.058			.052			.06		
	E_t	.12			.058			.050			.06		
	E_1	.074	10.8	.075	.038	6.7	.126	.042	7.4	.047	.045	6.4	.09
	E_2	.072	11.7	.087	.040	10.6	.070	.040	7.8	.057	.048	6.2	.072
	E_3	.072	11.9	.085	.041	7.8	.089	.040	8.1	.055	.048	5.7	.078

Crassostrea commercialis

		Neutral Red			Chlorella A			Chlorella T			Chaetoceros		
		O.D.	W	F	O.D.	W	F	O.D.	W	F	O.D.	W	F
	C_0	.10			.055			.05			.049		
	E_t	.10			.054			.05			.049		
17°c	E_1	.08	10.7	.042	.047	11.0	.025	.046	9.6	.017	.047	9.4	.009
	E_2	.08	10.0	.037	.046	10.6	.030	.048	9.5	.009	.048	13.5	.003
	E_3	.085	14.0	.023	.048	9.5	.025	.049	8.3	.005	.048	12.4	.004
	C_0	.12			.054			.05			.05		
	E_t	.12			.052			.05			.05		
20°c	E_1	.095	9.2	.050	.045	9.5	.038	.042	9.5	.037	.044	11.0	.025
	E_2	.09	11.0	.052	.045	9.7	.038	.04	11.0	.041	0.45	10.5	.020
	E_3	.099	8.7	0.44	0.47	11.6	.024	.042	8.9	.039	.048	6.8	.012
	C_0	.13			.04			.046			.044		
	E_t	.13			.04			.045			.044		
25°c	E_1	.066	5.6	.242	.037	2.8	.095	.032	10.5	.065	.040	3.4	.056
	E_2	.092	3.4	.203	.032	3.6	.043	.030	8.8	.092	.040	4.4	0.43
	E_3	.086	5.8	.142	.034	4.6	.097	.034	7.4	.076	.040	4.3	.044
	C_0	.11			.05			.045			.05		
	E_t	.11			.048			.043			.05		
30°c	E_1	.06	6.9	.176	.038	5.7	.082	.03	8.6	.084	.04	6.2	.072
	E_2	.07	3.8	.238	.040	5.4	.068	.03	8.2	.088	.03	7.9	.129
	E_3	.05	6.9	.229	.038	6.0	.078	.03	8.4	.086	.03	10.5	.097
	C_0	.10			.06			.04			.04		
	E_t	.10			.056			.038			.04		
35°c	E_1	.065	4.85	.178	.043	8.1	.065	.026	7.1	.107	.034	3.85	.084
	E_2	.069	5.2	.147	.043	7.7	.069	.03	6.4	.074	.03	4.2	.137
	E_3	.07	4.85	.147	.048	5.4	.042	.03	5.8	.082	.03	4.9	.117
	C_0	.13			.056			.04			.046		
	E_t	.13			.054			.04			.046		
38°c	E_1	.078	5.7	.179	.048	5.8	.050	.033	9.1	.042	.038	6.7	.057
	E_2	.06	9.9	.156	.046	7.7	.049	.030	10.1	.057	.041	6.6	.035
	E_3	.045	11.7	.181	.048	7.5	.039	.035	9.7	.040	.041	6.5	.035

Mytilus viridis

		Neutral Red			Chlorella A			Chlorella T			Chaetoceros		
		O.D.	W	F	O.D.	W	F	O.D.	W	F	O.D.	W	F
	C_0	.13			.06			.050			.03		
	E_t	.13			.055			.049			.03		
17°c	E_1	.112	1.6	.019	.045	14.2	.028	.035	18.5	.036	.025	14.5	.025
	E_2	.096	17.6	.034	.053	16.9	.004	.038	20.7	.025	.02	16.9	.048
	E_3	.083	20.9	.043	.043	16.9	.030	.040	15.0	.027	.02	17.3	.045
	C_0	.12			.053			.04			.04		
	E_t	.12			.050			.04			.04		
20°c	E_1	.056	21.0	.073	.014	21.6	.118	.01	18.0	.154	.012	18.0	.134
	E_2	.032	21.7	.122	.010	15.4	.209	.03	17.0	.034	.01	17.0	.163
	E_3	.052	24.5	.068	.008	15.4	.236	.022	13.8	.087	.021	16.3	.079
	C_0	.13			.053			.048			.05		
	E_t	.13			.050			.048			.05		
25°c	E_1	.013	22.6	.204	.007	15.0	.262	.015	18.5	.126	.003	26.4	.213
	E_2	.010	18.8	.273	.008	14.5	.253	.01	20.8	.151	.001	25.3	.309
	E_3	.006	21.2	.290	.007	12.0	.328	.01	22.2	.141	.005	27.2	.169
	C_0	.12			.048			.042			.045		
	E_t	.12			.046			.040			.043		
30°c	E_1	.02	17.2	.208	.013	18.5	.137	.005	14.6	.139	.007	19.5	.186
	E_2	.019	18.6	.198	.01	17.5	.174	.005	15.3	.133	.007	21.2	.171
	E_3	.019	19.6	.194	.016	18.6	.114	.006	16.8	.110	.007	23.7	.153
	C_0	.13			.050			.052			.05		
	E_t	.13			.048			.050			.05		
35°c	E_1	.05	23.8	.08	.024	15.0	.092	.028	15.8	.073	.02	18.2	.105
	E_2	.05	30.5	.063	.022	21.8	.072	.025	20.2	.069	.03	14.4	.071
	E_3	.045	22.5	.094	.025	14.2	.092	.020	17.5	.094	.03	13.8	.074
	C_0												
	E_t												
38°c	E_1												
	E_2												

2. ตัวอย่างวิธีคำนวณหาอัตราการกรอง (F)

2. ก. จากข้อมูล Anadara granosa ทดลองโดยใช้ Neutral Red ที่ 20°c

	O.D.	W (gm)
C_0	.10	
E_t	.10	
E_1	.079	9.5

จากสูตร $F = V \frac{(\ln C_0 - \ln C_t) - a}{t}$

$= 2 \frac{(-2.3026 + 2.5383) - 0}{1}$

$= 0.4714$ ลิตร/ช.ม.

$F = \frac{0.47}{9.5} = .050$ ลิตร/ช.ม./กรัม

2. ข. จากข้อมูล Anadara granosa ทดลองโดยใช้ Chlorella A ที่ 30°c

	O.D.	W
C_0	.041	
E_t	.039	
E_1	.024	8.9

จากสูตร $a = \frac{\ln C_0 - \ln C_t}{t}$

$$= \frac{-3.1942 + 3.2442}{1}$$

$$a = 0.05$$

$$F = 2\left(\frac{-3.1942 + 3.7297}{1}\right) - 0.05$$

$$= 0.971 \text{ ลิตร/ช.ม.}$$

$$F = 0.109 \text{ ลิตร/ช.ม./กรัม}$$

ประวัติผู้เขียน

นางสาวมัณฑนา ภิรมย์นิ่ม เกิดวันศุกร์ เดือน 10 ปีมะโรง ณ กรุงเทพฯ จบการศึกษาระดับ ปริญญาตรี วิทยาศาสตร์บัณฑิต ภาควิชาวิทยาศาสตร์ทางทะเล จุฬาลงกรณ์มหาวิทยาลัย เมื่อปี พ.ศ. 2518 ปัจจุบันรับราชการในตำแหน่ง นักวิชาการประมงทะเล 3 งานสถานวิจัย กองประมงทะเล กรมประมง กระทรวงเกษตรและสหกรณ์