Table 1
Best fitting curves for C1 + 2, B1, dcSTX and dcGTX2 + 3 in *Ruditapes decussatus* during phase I (exposure) and phase II (depuration); calculated parameters (standard error); correlation coefficients (r) and levels of significance (p).

Phase I (exposure)			
Equation type: $y = ax^b$			
Toxin	a	b	r
C1 + 2[a]	0.0004 (0.001)	2.45 (1.07)	0.812**
B1	0.007 (0.004)	1.55 (0.202)	0.976*
dcSTX	0.076 (0.024)	1.18 (0.122)	0.986*
dcGTX2 + 3	0.065 (0.043)	1.33 (0.298)	0.967*
Phase II (depuration)			
Equation type: $y = a\,e^{-bx}$			
Toxin	a	b	r
C1 + 2	0.26 (0.021)	0.17 (0.024)	0.965*
B1	0.56 (0.038)	0.025 (0.010)	0.733**
dcSTX	2.06 (0.146)	0.049 (0.012)	0.886*
dcGTX2 + 3	1.61 (0.097)	0.065 (0.008)	0.948*

*$p < 0.05$ and **$p > 0.05$.
[a] Valid to $x > 9$.

0.17 ± 0.024 day^{-1} for C1 + 2, 0.049 ± 0.012 day^{-1} for dcSTX and 0.065 ± 0.0085 day^{-1} for dcGTX2 + 3. The fitting curve for B1 presented a level of significance above 0.05 (Table 1), indicating a poorer first-order decay approach. Fig. 3 shows computed and measured toxin concentrations in clams during the two phases of the experiment (Fig. 3).

3.4. Toxin composition of particulate organic matter

The mass of particulate organic matter (POM) produced daily by 100 clams, from 10 experimental tanks, during phase I increased from 0.50 to 2.5 mg (Fig. 4). The amount was more irregular under depuration conditions, varying between 0.83 and 5.5 mg. Concentrations of the toxins C1 + 2, dcGTX2 + 3 and dcNEO in POM were always below the detection limit. Conversely, the toxin dcSTX was quantified, concentrations increasing from 2.5 to 5.9 nmol mg^{-1} as clams were fed with the toxic algae, and ranging between 3.8 and 14 nmol mg^{-1}, under a non-toxic diet (Fig. 4). Furthermore, three periods of dcSTX enrichment were observed in the produced POM. An intermediate situation was found for B1, concentration being undetectable, except during 4 days of the phase I of the experiment that reached a maximum of 2.5 nmol mg^{-1}.

3.5. Mass balance calculation

Table 2 gives the amounts of toxins supplied to clams, accumulated in whole clam tissues and in POM produced by clams during the exposure phase (I), depuration phase (II) and the entire experiment. The quantities of C1 + 2, B1, dcSTX,dcGTX2 + 3 and dcNEO, expressed in nmol, were computed on a basis of 100 clams, corresponding to 10 experimental tanks. In the mass balance calculation, the value of detection limit for each compound was accounted when concentrations were undetected.

Table 2 presents also the net gain values (T_{ng}) of each toxin calculated according to the equation (2). Negative values of T_{ng}, like for C1 + 2 and B1 in the phase I, mean that amounts supplied to the clams were not accounted in the whole clam tissues or POM. Approximately 95 and 85% of the mass of C1 + 2 ($T_a = 392$ nmol) and B1 ($T_a = 470$ nmol), respectively, added to the experiment tanks were converted into other toxins by clams or lost in solution ($T_{ng} = -372$ nmol and $T_{ng} = -401$ nmol, respectively). Conversely, positive values of dcSTX, dcGTX2 + 3 and dcNEO, imply a net gain most likely resulted from the conversion of other assimilated

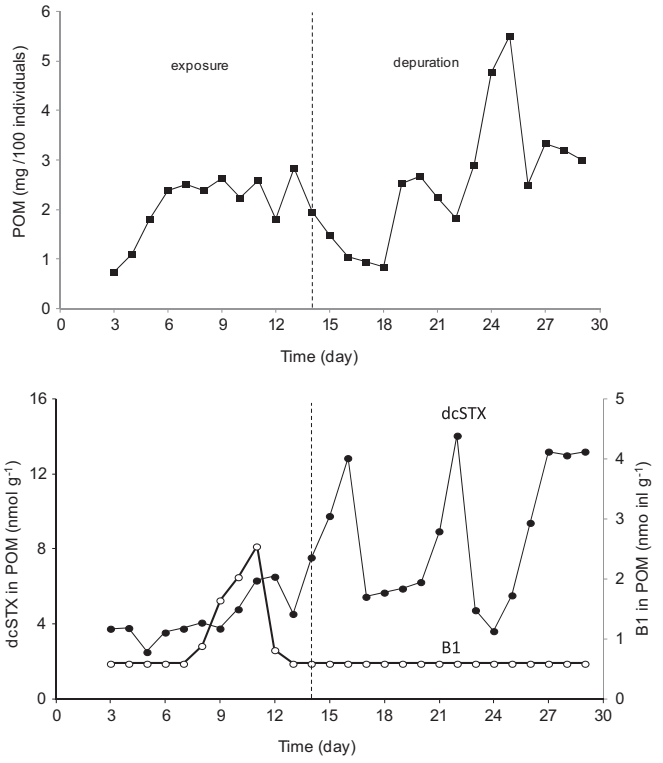

Fig. 4. Variation of the amount (mg) of particulate organic matter (POM) produced by 100 individuals of *Ruditapes decussatus* exposure to *Gymnodinium catenatum* and under depuration conditions; concentrations (nmol g^{-1}) of the toxins B1 and dcSTX in the POM.

compounds by clams. The net gain (T_{ng}) of dcSTX (250 nmol) and dcGTX2 + 3 (108 nmol) were approximately 5 times the amounts added to the tanks (50 and 21 nmol, respectively). The net gain of dcNEO (22 nmol) has no correspondence in the algae supplied. Under depuration (phase II), T_{ng} for C1 + 2, B1 and dcGTX2 + 3 were one order of magnitude lower (−15, 38 and −47 nmol, respectively) than during the phase I. Only 9 nmol of dcNEO were accounted. Contrarily, comparable T_{ng} were obtained for dcSTX in phases I (250 nmol), and phase II (262 nmol). The calculation of the T_{ng} values for the entire experiment, points to a substantial loss of

Table 2
Mass (nmol) of toxins accumulated in *Ruditapes decussatus* (T_c), supplied to the experiment (T_a) and present in particulate organic matter (T_p) after phase I, phase II, and phases I + II. Values of T_{ng} were computed according to equation (2). Amounts were calculated for a basis of 100 clams.

	Toxin	T_c	T_a	T_p	T_{ng}
		nmol	nmol	nmol	nmol
Phase I	C1 + 2	20	392	–	−372
	B1	41	470	28	−401
	dcSTX	180	50	120	250
	dcGTX2 + 3	129	21	–	108
	dcNEO	22	–	–	22
Phase II	C1 + 2	−15	–	–	−15
	B1	17	–	21	38
	dcSTX	−26	–	288	262
	dcGTX2 + 3	−47	–	–	−47
	dcNEO	9	–	–	9
Phase I + II	C1 + 2	5	392	–	−387
	B1	58	470	49	−363
	dcSTX	154	50	408	512
	dcGTX2 + 3	82	21	–	61
	dcNEO	31	–	–	31