

THE EFFECT OF N-UREA ON THE BEHAVIOUR OF PELAGIA NOCTILUCA (FORSKAL)

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ABSTRACT. A laboratory experiment performed on two specimens of Pelagia noctiluca collected in the Gulf of Trieste shows that their behaviour is apparently unaffected by N-urea up to high concentrations.

RESUME. On a étudié en laboratoire le comportement de Pelagia noctiluca à haute concentration de N-urea. Cette première phase d'étude a démontré que Pelagia noctiluca ne présente, apparemment, aucune réaction.

The aim of our experiment was to study the behaviour of Pelagia noctiluca collected from the Gulf of Trieste, in the presence of urea.

METHODS

Two specimens of Pelagia noctiluca (I, II), collected in the Gulf of Trieste and observed in a control tank (22°C, salinity ‰ 37.1, uniform diffuse daylight; 80±10 contractions/min), have been used for this experiment 24 h after their capture. The experiment was performed in a rectangular glass tank measuring 29x79 cm and filled with sea water (22°C, salinity ‰ 37.1, uniform diffuse daylight, 1.8 g-at.l⁻¹ N-urea) to a height of 20 cm. The tank was constructed in such a way that the urea diffused from a directional source (Fig. 1).

At time T=0, a solution of 60 mg of N-urea in 10 ml H₂O was injected at point U. The N-urea was analyzed one day later, according to De Manche et al. (1973) and using a Technicon Autoanalyzer, on frozen water samples (20 ml) collected at points A,...E in the tank for one minute every ten minutes by means of a multichannel peristaltic pump. The initial value, 1.8 g-at.l⁻¹ of N-urea, is characteristic in this coastal area (From 1.1 to 1.8, September 1981).

RESULTS

The results of this experiment are summarized in Table 1. Together with the N-urea concentrations at five points in the tank the behaviour of Pelagia noctiluca has been observed as regards its pulsating rate and its motility. Specimen I started from normal N-urea concentrations at T=0; specimen II was put into the tank after 70 min at a point between D and E, when N-urea was there about 45 g-at.l⁻¹, in order to eventually observe some shock conditions.

Our comment on these data is that no effect can be recognized in the behaviour of Pelagia noctiluca in the presence of N-urea gradually increasing from 1.8 to 42.2 g-at.l⁻¹. We cannot state

TABLE 1.

TIME (min)	UREA ($\mu\text{g-at. l}^{-1}$)					SPECIMEN	PULSATING RATE	MOTILITY
	A	B	C	D	E			
00	1.8	1.8	1.8	1.8	1.8	I	80 R.	O S. A
10	2.9	7.0	8.7	22.0	30.0	I	50 R.	O S. A
15						I	60 R.	O S. A
20	23.3	25.5	20.0	64.7	65.2	I		
25						I	74 AR.	O S. A
30	62.4	33.4	27.8	26.9	60.8	I		
35						I	88 AR.	O S. A
40	33.3	26.9	21.5	52.9	56.0	I		
50	37.3	30.2	28.7	50.3	55.1	I	94 AR.	O S. A
55						I	94 AR.	+ S. A→E
58						I	94 AR.	++ S. E→D
60	38.3	34.1	34.0	53.5	52.3	I	94 AR.	O S. D
65						I	81 AR.	++ S. D→C
70	38.4	44.4	36.7	43.3	51.1	I	70 AR.	O S. γ
						II	74 R.	↓ B. D-E
80	42.6	40.8	42.7	43.6	48.4	II	96 R.	↑ S. D-E
90	41.7	37.0	42.8	44.1	45.4			
95	homogeneous					I	89 AR.	O S. γ
						II	95 R.	++ S. →E
100	homogeneous					I	81 R.	O S. γ
						II	104 R.	++ ↑ E→ γ
110	homogeneous					I	81 R.	O S. γ
						II	89 R.	O ↑ γ
115	homogeneous					II	81 R.	++ ↑ γ →E
120	homogeneous					I	82 R.	O S. γ
	42.2					II	86 R.	++ ↑ E→ γ

Pulsating rate (Contr/min): R., rhythmic; AR., arrhythmic.

Motility: horizontal (Arbitrary scale); O, +, ++.

vertical; ↑, up; ↓, down; ↑↓, oscillating.

S., surface; B., bottom; A, near A; A-B, between A and B;

A→B, from A to B.

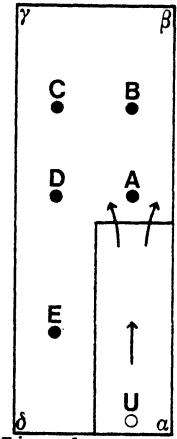


Fig. 1 - Experimental tank (Top view). U, N-urea source; A, B, C, D, E, sample points.

if the arrhythmic pulsating rate of specimen I, during the urea diffusion phase, is a consequence of this, or is more probably due to its captivity conditions.

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