



Approach to Urinary Bladder Paraganglioma

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Introduction

We can't dispute the primordial place of plants, both aquatic and terrestrial, without which there would be no oxygenated life on earth, because plants are involved on the one hand in the oxygenation of the earth and on the other hand in absorption of carbon dioxide during photosynthesis. Besides these two fundamental roles linked to the photosynthetic process, plants are also a source of life or energy for other living organisms such as herbivorous zooplankton, pollinating insects... therefore the plant world participates too in the terrestrial and oceanic food chains.

For example, the photosynthetic and bioluminescent microalgae, *Lingulodinium* dinoflagellate are plants that initiate the marine food chain by being consumed by copepods, moreover, they contribute to the formation of coral reefs [1,2]. In sum, they give life to the marine world, showing that the life of heterotrophic organisms depends closely on the autotrophic organism's life.

However, the importance of plants is still underestimated. Among living beings, plants still occupy a secondary place in a world where animal living beings are qualified as superior, but like animals, plants can communicate, show sensitivity and testify to a certain intelligence, like we show here with the *Lingulodinium* dinoflagellate.

Intelligence

In the *Lingulodinium* dinoflagellate a diurnal and daily vertical migration is observed towards the surface of the water, allowing them to benefit from better solar luminosity. These strategic migrations are proof of the intelligence of these marine protist without forgetting the presence of a memory or internal clock allowing them to perpetuate these circadian rhythms.

Their intelligence is also seen in their adaptation to the living environment and in their way of defending themselves. Like any living being, *Lingulodinium* microalgae know how to adapt to variations in their living environment, and when faced with their predators, they produce bioluminescence to defend themselves.

Sensitivity

Lingulodinium microalgae, under abundance conditions of light and nutrients, proliferate rapidly until they form red tides testifying that they can be sensitive to levels of solar light and nutrients, in particular nitrogen and phosphate.

To complete the testimony of this sensitivity, we can also evoke the formation of survival cysts when these microalgae are subjected to temperatures colder than those of their growth. These two examples are sufficient to certify the plant sensitivity expressed by the *Lingulodinium* dinoflagellate.

Communication

Communication is also observed in the *Lingulodinium* dinoflagellate because a recent study showed that *Lingulodinium* and *D. shibae* were capable of symbiotic exchanges of metabolisms essential for their growth. In a culture medium devoid on the one hand of vitamins B1 and B12 of whose *Lingulodinium* is auxotrophic and on the other hand of vitamin B7 of whose *D. shibae* is auxotrophic, *Lingulodinium* proliferation was observed thanks to the production of vitamins B1 and 12 by *D. shibae* and in turn *Lingulodinium* produced vitamin B7 allowing the growth of *D. shibae*. This experiment shows a symbiotic communication between a eukaryotic organism and its prokaryotic neighbor.

Here, we can assume that the two organisms have communicated mutually their lack in order to a reciprocal satisfaction so the crucial need of one is satisfied by the other and vice versa, which suggests close communication between the two organisms for the synthesis and diffusion of essential metabolites in the culture medium.

Conclusion

The superiority of plants testified here by the faculties of communication, memory, or sensitivity of the *Lingulodinium* dinoflagellate leads us to question on the importance given to plants which are still classified as inferior as shown on the one hand anti-speciesism which excludes plant or at least doesn't include them in the equality advocated for all animal living beings, and on the other hand veganism and vegetarianism exploit them without limit.

Here, it is not a question to say that plants are equal to living animal beings including human. But to reconsider, in our world, their preponderant and fundamental place for the animal kingdom, in order to rethink their exploitation and their preservation.

To extend the anti-speciesism to plants would be depriving us of a food source fundamentally vital because if we no longer eat either animals and plants, therefore we will have to know how to become autotrophic.

Acknowledgement

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Conflict of Interest

No conflict of interest.

References

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