

Marennine-like pigments: microalgae blue mystery

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Microalgae represent new sources of proteins, lipids, carbohydrates and molecules with high added value. Among them, blue diatoms of the genus *Haslea* stand out for their ability to produce water-soluble blue-green pigments, released in the so-called “blue water” [1]. In particular, the species *Haslea ostrearia* has long been known to synthesize marennine, which is responsible for the greening of oysters in refining oyster-ponds of western France (“fines de claires vertes”). This compound could be regarded as a new natural blue dye for the cosmetic and food industries, as the demand is growing increasingly, however, the chemical structure of this complex biopolymer still remains unknown. Moreover, new species of blue *Haslea* producing marennine-like pigments have been discovered recently [1, 2]. The Bluedimary project (Blue diatoms and marennine-like pigments for biorefinery) seeks to elucidate the structure of these pigments and to bring information on the other biomolecules produced by *Haslea* species, in complement with the H2020 GHANA programme, which main objective is to study the biodiversity of the genus. Recent progress on the purification steps and the structural characterization of marennine-like pigments will be presented, especially on the polymer backbone and the chromophore nature. Further results on the different compounds in the “blue water” will be discussed, for the overall valorisation of this natural extract.

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References

- [1] Gastineau R et al. *Mar Drugs*. 2014; 12:3161-3189.
- [2] Pouvreau JB et al. *J Appl Phycol*. 2006; 18:757-767.