

SIDESTREAM

Secondary bio-production of low trophic organisms utilizing side streams from the Blue and Green sectors to produce novel feed ingredients for European aquaculture

About the project

To what extent is it possible to process and use nutrients from aquaculture and agriculture waste? Which novel organisms and approaches are best suited? Can these organisms serve as ingredients for feed stuff? How suitable and safe are feed ingredients produced on waste? What is the market potential and economic feasibility of feed ingredients produced following sustainable circular principles?

SIDESTREAM addresses these questions to push forward the frontier for production of high value compounds by utilization of low trophic marine invertebrates and bacteria, which will be reared on waste streams, following circular principles. Several industries are in demand for high value compounds such as marine-originated lipids, proteins and pigments such as astaxanthin. Omega-3 long-chain ($\geq C20$) polyunsaturated fatty acids ($\omega 3$ LC-PUFA) are marine lipids that are abundant in fish oils and fish meals ("marine ingredients"). Use of $\omega 3$ LC-PUFA in aquafeeds ensures both growth and health of farmed species and their nutritional value for consumers. Aquaculture is by far the largest consumer of marine ingredients thus requiring novel high nutritional quality ingredients to critically ensure sustainable expansion. Additionally, there is a trend towards natural bioactive compounds such as astaxanthin as a natural bioactive stimulant (nutraceutical), which adds value to the resulting feed.

SIDESTREAM partners have shown that polychaetes and crustaceans can produce $\omega 3$ LC-PUFA de novo. Such striking capacity will be exploited in SIDESTREAM. We will take side streams from aquaculture, agriculture and biogas sectors, and produce polychaetes and gammarids on the solid phase and bacterial astaxanthin on the liquid phase. Biomasses will be processed and tested as feed ingredients for fish and shrimp during all life stages. SIDESTREAM cutting-edge approach will enable value creation from resources hitherto considered as waste, allowing for innovation and sustainable use in aquaculture.



Project Overview

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Exploring new bioresources

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