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TITLE: Microbial and genetically engineered oils as replacements for fish oil in aquaculture feeds

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ABSTRACT:

As the global population grows more of our fish and seafood are being farmed. Fish are the main dietary source of the omega-3 (n-3) long-chain polyunsaturated fatty acids (LC-PUFA), eicosapentaenoic (EPA) and docosahexaenoic (DHA) acids, but these cannot be produced in sufficient quantities as are now required for human health. Farmed fish have traditionally been fed a diet consisting of fishmeal and fish oil, rich in n-3 LC-PUFA. However, the increase in global aquaculture production has resulted in these finite and limited marine ingredients being replaced with sustainable alternatives of terrestrial origin that are devoid of n-3 LC-PUFA. Consequently, the nutritional value of the final product has been partially compromised with EPA and DHA levels both falling. Recent calls from the salmon industry for new sources of n-3 LC-PUFA have received significant commercial interest. Thus, this review explores the technologies being applied to produce de novo n-3 LC-PUFA sources, namely microalgae and genetically engineered oilseed crops, and how they may be used in aquafeeds to ensure that farmed fish remain a healthy component of the human diet.

SOURCE: Biotechnology letters

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