

## ABSTRACT

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### Perspectives

Polar lipids: n-3 PUFA carriers for membranes and the brain:

#### Nutritional interest and emerging processes

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**Abstract:** The n-3 fatty acids are unanimously considered to have high nutritional value, especially the long chain (LC) polyunsaturated fatty acids (PUFA) from marine origin. However, most of the products available in the market contain LC-PUFA esterified on the glycerol under the common form of triglycerols. This study investigates a process by which the PUFA can be esterified on polar lipids, especially phospholipids. This proprietary process is performed under low temperature without use of solvents and produces a Phospho-Lipo-Peptidic Complex that is particularly rich in DHA and is esterified in the proper sn-2 position on PL. Further, it has been demonstrated that n-3 fatty acids esterified on polar lipids instead of triglycerols, and retained in the proper, natural sn-2 position, have dramatically enhanced gastrointestinal absorption and intracellular incorporation (Bourre 2004). In pharmacokinetically validated CACO-2 studies, n-3 PUFA absorption across the enteric barrier was 5 fold over triglycerol bound n-3 PUFA fish oil. Subsequent intracellular levels were 50 fold greater. Phospholipids themselves have been shown in other studies (Kidd 1999; Bernoud, et al, 1999) to have direct brain impact, especially in the area of memory and learning performances in the aging human. Therefore, a process by which n-3 PUFA can be delivered in the correct sn-2 position and esterified to phospholipids may be a preferred delivery model over n-3 PUFA delivery esterified to triglycerols in fish oil.

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