

## Assessment of Microalgal Lipids by Enhancing EPA and DHA for Integration into Infant Milk Formulas

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**Abstract :** Fatty acids such as DocosaHexaenoic Acid (DHA) and EicosaPentaenoic Acid (EPA) are of growing interest for their positive impact on human health. Oils rich in omega-3 are in high demand, particularly for incorporation into infant milk. Generally omega-3 fatty acids are extracted from oily fish, putting additional pressure on global fish stocks that is experiencing an over exploitation. Therefore, this present work aimed to study the capacity of three different strains of microalgae for producing lipids rich on Omega-3 fatty acids such as EPA and DHA that can be used to enrich infantile milk. Three different strains were selected for this study; *Parachlorella kessleri* (GEPEA UMR-CNRS6144, University of Nantes) and *Cyclotella* spp and *Scenedesmus* spp (collected from different water bodies that are located in the region of Agadir, Morocco). It examined the impact of various culture conditions on EPA and DHA accumulation in three strains. Lipid composition was analyzed using GC-MS and FTIR. Following a comparative analysis between regular and microalgal oil-supplemented formula milk was carried out by incorporating large droplets of fat containing microalgal fatty acids coated with added phospholipids into the formula milk. Results indicated that culture conditions such as light intensity affected fatty acids production. With 40% increase in Polyunsaturated Fatty Acids (PUFA) compared to Saturated Fatty Acids (SFA). In conclusion, this exploratory study indicates that incorporating large milk phospholipid-coated lipid droplets enriched with microalgae lipids into infant formula may offer improved nutritional benefits for newborns, resembling human milk.

**Keywords :** microalgae oil, INFANT MILK, EPA, DHA

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