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Effects of long-term oil diet on fatty acids phospholipids in hepatocytes

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Vegetable oils are used in everyday diets worldwide as the major source of energy and essential fatty acids. However, the composition of fatty acids in vegetable oils is significantly different in various oil types.

In this study, we showed that long-term linseed, palm, or sunflower oil consumption differently affect the liver phospholipids fatty acids composition in C57/BL6 mice model. The fatty acids mostly contributing that difference were stearic, oleic, vaccenic, ALA, AA, EPA, DTA, and DHA. Moreover, the composition of fatty acids of dietary oils is not always in line with their insertion into the liver phospholipids. As we detected a low concentration of LA in palm oil but the extensive incorporation into the liver phospholipids. High oleic sunflower oil led to the increased insertion of oleic acid in the liver phospholipids and an increase in overall MUFAs. That indicates that sunflower oil could have beneficial effects on the liver tissue due to the increase in the total MUFA ratio. Furthermore, we assume that the metabolism of n-3 PUFAs after linseed oil consumption is not sex-specific in the C57/BL6 mice model. However, the exact mechanisms of sex hormones and their impact on fatty acid metabolism in the liver are yet to be discovered. Our future investigation will be addressed on the various organs and sex-specific differences in this C57/BL6 mice strain, which is appropriate for lipid metabolism studies.

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