

INTRAVENOUS LIPID EMULSIONS AND LIVER FUNCTION IN ADULT CHRONIC INTESTINAL FAILURE PATIENTS: Results from a randomized clinical trial

All four intravenous lipid emulsions (ILEs) tested may be safe even during long term parenteral nutrition (LCT, LCT/MCT, Olive Oil/LCT and MCT/LCT/Olive Oil/Fish Oil). Olive oil/long-chain triglycerides (OO/LTC) may be more effective than the others, but more studies in the field are needed.

STUDY OVERVIEW

STUDY DESIGN:

A randomized, blind, controlled clinical trial in four parallel groups

Inclusion Criteria: Chronic intestinal failure on parenteral nutrition (PN) including lipids, metabolic stability*, and ability to tolerate up to 1.0g lipids/kg body weight per day as part of PN

Testing: Lipid emulsion added to the regular PN admixture as part of all-in-one solution

Treatment Period: 12-month study defined as time from first administration until final infusion of test emulsion, with 4-week follow-up period

*Absence of pathologic laboratory testing that resulted in a change of PN regime for at least 1 month

STUDY OBJECTIVE:

Evaluate the impact of 4 different ILEs on intestinal failure associated liver disease (IFALD)

Lipids Tested:

- LCT
- MCT/LCT
- OO/LCT
- MCT/LCT/OO/Fish Oil

LCT, long-chain triglycerides; MCT, medium-chain triglycerides; OO, Olive Oil





RESULTS

AN OLIVE OIL- BASED LIPID EMULSION MAY BE MORE EFFECTIVE IN DECREASING BILIRUBIN AND GGTP

The omega-9 fatty acid rich ILE-based olive oil was the only group compared to LCT, MCT/LCT and MCT/LCT/00/Fish Oil to demonstrate a reduction in liver function markers bilirubin and GGTP.

All four ILEs demonstrated comparable influence on liver in all study periods. The only exception was the decrease in total bilirubin concentration after 12 months (28.1 ± 25.3 vs. 11.1 ± 4.5 , $p = 0.0023$) and GGTP (222.5 ± 205.8 vs. 146.6 ± 197.7 , $p = 0.0079$) when OO/LCT was in use.

BILIRUBIN ^A	GGTP ^B
Day One Olive Oil Patients $28.1 \pm 25.3 \mu\text{mol/L}$	Day One Olive Oil Patients $222.5 \pm 205.8 \text{ U/L}$
 60%	 34%
12 Month Olive Oil Patients $11.1 \pm 4.5 \mu\text{mol/L}$	12 Month Olive Oil Patients $146.6 \pm 197.7 \text{ U/L}$
$P= 0.0023$	$P= 0.0079$
This was the only significant positive result from baseline to end of study period for any treatment group.	

A. Bilirubin Test - Measures the amount of bilirubin. High levels of bilirubin may lead to health conditions like jaundice, anemia and liver disease

B. GGTP Test - Checks the health of the liver by measuring the amount of the enzyme, Gamma-glutamyl transpeptidase (GGTP) in blood. High GGTP indicates a greater risk to the liver



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All four intravenous ILEs tested may be safe even during long-term parenteral nutrition. OO/LCT may be more effective than the others, but more studies in the field are needed. Although the authors recognize there are limitations to this study, they hypothesize that Olive Oil-based ILE may be more promising than other ILEs during long-term PN.



Open Access Link:

<https://www.sciencedirect.com/science/article/pii/S0899900718301059?via%3Dihub>

REFERENCE:

1. Klek S, et al. Intravenous lipid emulsions and liver function in adult patients with chronic intestinal failure: Results from a randomized clinical trial. *Nutrition* 2018;55-56:45-50.