The aim of this study was to investigate the role of the food matrix on bioavailability of (n - 3) PUFA and oxidative stress in plasma. The study was a randomized, cross-over study and included 12 healthy male participants. The participants ingested a test meal, which consisted of a fitness bar, a yoghurt drink, eight oil capsules, bread and butter; 4 g of fish oil was incorporated into one of the matrices. Blood samples were collected and fatty acid composition of chylomicrons was determined together with plasma levels of conjugated dienes and alpha-tocopherol. Fish oil incorporated into food products were absorbed differently from those simply administered as supplements alongside of food products, and yoghurt was the best matrix for providing fast absorption of lipids in general, including (n - 3) fatty acids. No significant difference was observed in the level of plasma alpha-tocopherol after ingestion of test meals. (c) 2007 Elsevier Ltd. All rights reserved.