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To cite this version:

Patrick Borel, C Dubois, A Forget, Martine Armand, P Grolier, et al.. Effects of amount of dietary triglycerides on postprandial serum vitamin A in heathly adults. Reproduction Nutrition Development, 1994, 34 (6), pp.619-619. hal-00899695

HAL Id: hal-00899695

https://hal.science/hal-00899695v1

Submitted on 11 May 2020

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Effects of amount of dietary triglycerides on postprandial serum vitamin A in heathly adults. P Borel [1], C Dubois [2], A Forget [1], M Armand [2], P Grolier [1], H Portugal [3], AM Pauli [3], PM Bernard [4], V Azais-Braesco [1], D Lairon [2] (*[1] INRA, Unité Vitamines, Laboratoire de Nutrition et Sécurité Alimentaire, Jouy-en-Josas; [2] Unité 130-INSERM, 18, avenue Mozart, 13009 Marseille; [3] Laboratoire Central d'Analyse, Hôpital Sainte-Marguerite, Marseille; [4] Service de Médecine Interne et Endocrinologie, Hôpital Sainte-Marguerite, 13000 Marseille, France*)

Absorption of fat-soluble vitamins is generally claimed to be dependent on the amount of dietary fat and this has been established for tocopherol and β-carotene. Nevertheless, no definite evidence has been established for vitamin A. Thus, the aim of this study was to evaluate the importance of the amount of dietary triglyceride on the blood postprandial vitamin A response in healthy human subjects. Eight young healthy males participated in the study. The meals consisted of commercially available food and contained 50 000 IU vitamin A (as retinyl palmitate) and different amounts of triglycerides (0, 15, 30, 40 g as sunflower oil). Fasting blood samples were obtained before the meal and postprandial blood samples were taken every hour for 7 h. Serum was separated and chylomicrons remnants (CMR) were isolated by ultracentrifugation. Triglycerides were determined by an enzymatic procedure. Retinol and retinyl esters (palmitate/oleate, stearate, linoleate) were determined using reverse-phase HPLC with UV detection. In the presence of dietary fat, CMR triglycerides rose postprandially and areas under the curve (AUC) for serum and CMR triglycerides were positively correlated ($r = 0.57$, $p < 0.01$) with the amount of fat in the meal. Postprandial serum retinol levels were not significantly affected by the test-meals. AUCs for serum and CMR retinyl stearate were not significantly affected by the amount of dietary triglyceride. In contrast AUCs for CMR retinyl palmitate/oleate and retinyl linoleate were positively correlated ($r = 0.47$, $p < 0.01$ and $r = 0.60$, $p < 0.001$) with the amount of fat in the meal. The results obtained show that increasing the dietary triglyceride intake in healthy humans could enhance vitamin A serum postprandial response: the AUC for CMR retinyl esters increased from around 3 (IU/ml serum)•h for the fat-free test-meal to around 8 (IU/ml serum)•h for the 40 g triglyceride test-meal. Moreover, among the 3 retinyl esters checked retinyl linoleate seemed to be the best marker of vitamin A absorption since the AUCs of the other retinyl esters plateaued when dietary triglycerides increased even though AUCs for retinyl linoleate keep on increasing. Finally retinyl linoleate seems to be a better marker of triglyceride rich lipoproteins of intestinal origin than retinyl palmitate, because, unlike retinyl palmitate, there was no detectable retinyl linoleate in fasting serum, and the AUCs for CMR triglycerides and the AUCs for CMR retinyl linoleate were well correlated ($r = 0.46$, $p < 0.01$).

II. Lipid metabolism

Effects of dietary milk fat on lipid synthesis and fatty-acid deposition in swine. M Camara, J Mourot, C Février (*INRA, Station de Recherches Porcines, 35590 Saint-Gilles, France*)

It is know that dietary fat influences both the amount and the extent of lipid metabolism in pig. The relationship between fat intake and the fatty-acid composition of the adipose tissue is well established. However, to date, few studies have been devoted to the effects of dietary fatty acids provided at a constant level on the body composition of swine. Only the amount of dietary lipids was examined, disregarding the energy intake. The induction of fatty acids from animal sources into pigs should lead to the deposition of saturated fatty acids, which have better technological properties. However, the available data do not allow any conclusion about the lipid synthesis and the extent of adipose tissues.

Twenty-eight Large White x Pietrain cross-bred pigs, averaging 75 kg (initial) to 108 kg (final) live weight, were allotted into 2 similar groups. They were fed diets containing the same level of energy and lipids from goats' milk (LC) or cows' milk (LV) (both 20% of the dry matter intake), in addition to fortified barley. The fat-diet contents were different for different fatty acids: C18: 1.4 and 2.5% C10: 2.4 and 7.7%; C16: 37.3 and 33.4 expressed as percentage of total fatty acids for LV and respectively LC. Feed intake and growth performance were similar in the 2 groups. The percentages of body fat were 22 and 22.4%; the lipid