

# **Effect of 2 Different Sources of *trans* Fatty Acid (milk fat vs hydrogenated oil) on the Postprandial triacylglycerol-rich Lipoproteins Metabolism and their Implications on the Cardiovascular Disease Risk Incidence in Healthy Male Volunteers**

J Mourirot<sup>\*\*</sup>, F Compagnon<sup>§‡</sup>, JM Chardigny<sup>\*\*</sup> and C Malpuech-Brugère<sup>§‡</sup>

\*INRA, UMR1019, Clermont-Ferrand, F63009 France; <sup>§</sup>Univ Clermont1, UFR

Médecine, UMR 1019, Clermont-Ferrand, F63009 France;

<sup>‡</sup> CRNH-Auvergne, Clermont-Ferrand, F63009 France.

**Background:** Detrimental effects of consumption of industrial trans fatty acids (TFA) from partially hydrogenated vegetable oils (PHVO) on cardiovascular disease (CVD) risk factors are well documented. However, very little information is available on the effect of natural sources of TFA coming from milk fat, dairy products and ruminant meat.

Moreover, postprandial lipemia has been correlated with an increase in NF- $\kappa$ B activation in vascular cells which may be involved in the development of atherosclerotic plaque in association with an increase in postprandial triacylglycerol-rich lipoproteins.

**Objective:** The first objective is to determine whether a difference in the metabolism of the triacylglycerol-rich lipoproteins exists after the intake of an industrial TFA supplemented meal vs the intake of an animal TFA enriched meal in male volunteers (20 to 50 years old).

**Design:** This study is a monocentric, randomised, cross-over, simple blind study. Twenty healthy, normolipemic male volunteers ( $26.5 \pm 6.1$ y) were recruited. The subjects ingested these two fat-rich test meals (0.5 g fat per kg body weight) in a random order separated by 4-week washout periods. CO<sub>2</sub> production and O<sub>2</sub> consumption using continuous indirect calorimetry was carried out at 0, 2h after the meal to evaluate energy expenditure and fat oxidation. Blood samples were drawn before and 2, 4, 6, 8 hours after eating. Different parameters were measured: fatty acids composition of the triacylglycerol-rich lipoproteins; total cholesterol, HDL-cholesterol and triacylglycerol were assessed in plasma and lipoprotein fractions. The relative activation of the intracellular nuclear factor NF $\kappa$ B in white blood cells was evaluated as an inflammatory parameter.

This study is currently run-in. Main results are expected next April.