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Jc M’Fouara, Mn Bouziane, J Prost, J Belleville. Protein malnutrition associated with various oils (sunflower, soya, coconut and salmon) on platelet aggregation and MDA in the rat. *Reproduction Nutrition Development*, 1992, 32 (5-6), pp.508-508. <hal-00899564>

HAL Id: hal-00899564

<https://hal.science/hal-00899564v1>

Submitted on 11 May 2020

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Protein malnutrition associated with various oils (sunflower, soya, coconut and salmon) on platelet aggregation and MDA in the rat. JC M'Fouara, MN Bouziane, J Prost, J Belleville (*Université de Bourgogne, Faculté des Sciences Mirande, Unité de Recherche de Nutrition Cellulaire et Métabolique, BP 138, 21004 Dijon Cedex, France*)

Fatty acid metabolism and transport are modified by protein depletion. Requirements in polyunsaturated fatty acids (PUFA) of series n-3 and n-6 could be amplified, in the long term, by protein depletion. PUFA lipoperoxidation involved the formation of compounds such as malonyldialdehydes (MDA) which accelerate platelet aggregation. The aim of this study was to evaluate MDA production and platelet aggregation rate in young rats fed balanced (20% casein) or depleted (2% casein) protein diet associated with various oils (sunflower, soya, coconut or salmon).

Over a 28-d period, 8 groups of 6 male Wistar rats were fed 8 different diets: SFC (20% casein + 5% sunflower oil), SFd (2% casein + 5% sunflower oil), SC (20% casein + 5% soya oil), Sd (2% casein + 5% soya oil), SAC (20% casein + 5% salmon oil), SAd (2% casein + 5% salmon oil), COC (20% casein + 5% coconut oil), COd (2% casein + 5% coconut oil). Blood was removed, platelet aggregation rate was measured on enriched plasma platelet (using the optic Method of Born) and MDA was assessed in plasma (reaction with thiobarbituric acid).

Platelet aggregation

For balanced diets, higher values were obtained with the SFC and SC groups. For the depleted groups, platelet aggregation rate was decreased in groups SFC and SC, increased in SAd group, but no difference was observed with coconut oil (COd).

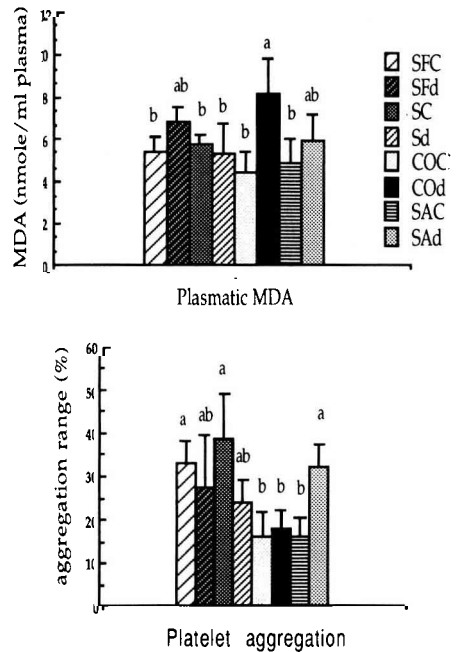


Fig 1. Values are means \pm SE for 6 rats. Classification of the means were performed using Duncan's new multiple range test. Means differ significantly if letters are different ($P < 0.05$).

Malonyldialdehydes

In the group fed balanced protein diets, lower values were obtained with salmon and coconut oils. MDA contents of SFd, COd and SAd groups were higher than those in their respective control group, but values were significantly more elevated in the COd group.

In the short term various effects were observed, particularly on platelet aggregation rate and plasma MDA contents. Modifications involved in protein depletion varied according to the oil consumed.