Proceedings of the Nutrition Society (2013), **72 (OCE1)**, E11 doi:10.1017/S002966511300013X

6th International Workshop on Immunonutrition, 15th–17th October 2012, Palma de Mallorca

Fatty acid profile in children suffering from Cystic fibrosis

P. D. Perris[1], M. S. Feliu[1], S. Giacomino[1], S. Barbeito[2], A. Franchello[2], I. Ruiz-Pugliese[2], A. Caamaño[3], M. Ferraro[2] and N. H. Slobodianik[1]

[1]*Department of Nutrition and Food Science. Faculty of Pharmacy and Biochemistry, Buenos Aires, Argentina,* [2]*Nutrition Service, Pedro de Elizalde Hospital and* [3]*Pediatric Laboratory, Hospital of Clinicas "José de San Martín" Buenos Aires, Argentina*

Cystic fibrosis (CF) is a complex multisystem disorder affecting mainly the gastrointestinal tract and respiratory system. Intestinal malabsorption occurs in approximately 90% of patients. In the past, malnutrition was an inevitable consequence of disease progression, leading to poor growth, impaired respiratory muscle function, decreased exercise tolerance and immunological impairment. The cystic fibrosis and the nutritional status have a bidirectional relationship. The energy requirements of patients with CF very widely and generally increase with age and disease severity. A balanced diet, which includes adequate calories and the right vitamin and mineral supplements, is key to good nutrition and health.

The aim of this study is to determine the fatty acid profile in a group of children suffering from CF. Fifteen children nonhospitalized suffering from CF, between 3 months to 10 years of age, both sexes, assisted at the Nutrition Service from Pedro de Elizalde Hospital, were evaluated. Control group was obtained in healthy children assess in the same hospital. The report was approved by the Ethics Committee of the University of Buenos Aires and parents have given informed consent before recruitment children into the study. Characteristics of recommended CF diet: energy intake 120% of requirements, caloric distribution: 40% fat (10% saturated, 10% polyunsaturated, 10% monoinsatured), covering essential fatty acids according to age; 15 to 20% protein of high biological value and 40% carbohydrates. All patients were supplemented with vitamins A, D, K and E.

Samples of whole blood were collected from fasting patients and serum fatty acid profiles were determined, by gas chromatography.

	FQ	CONTROL
PALMITIC	23.4 (1.9)*	19.1 (2.2)
OLEIC	21.2 (2.3)*	14.3 (1.9)
LINOLEIC	20.7 (3.0)	20.4 (1.9)
α LINOLENIC	0.4 (0.2)	0.4 (0.1)
ARACHIDONIC	2.8 (1.2)*	6.0 (1.0)
EICOSATRIENOIC (EPA)	0.8 (0.4)	0.5 (0.2)
DOCOSATRIENOIC (DHA)	0.4 (0.2)*	0.8 (0.2)

Results expressed as % area (SD) were compared by Student's *t*-test with the control group (*$p<0.001$).

Children suffering CF show statistically higher values of palmitic and oleic acids, with lower values of arachidonic acid and DHA. Linoleic, α-linolenic acids and EPA were no statistically different in both groups. The increase in oleic serum level was probably due to the deficiency of essential fatty acid, which might have exacerbated the omega-9 family route. These findings suggest that the studied group did not cover essential fatty acids requirements. Thus, these preliminary results could explain the need to include the determination of this profile in the early nutritional evaluation in CF patients in order to use appropriate nutritional and pharmacological therapies, and consequently to improve survival and quality of life of these patients.

1. Slobodianik N, Feliu MS, Perris P, Barbeito S, Strasnoy I, Franchello A, Ferraro M (2010) *Proc Nutr Soc* **9**, 354–356.
2. Dodge JA & Turck D (2006) *Res Clin Gastroenterol* **20**, 531–46.