European Respiratory Society
Annual Congress 2013

Abstract Number: 2516

Publication Number: P2112

Abstract Group: 7.3. Cystic Fibrosis

Keyword 1: Anti-inflammatory **Keyword 2:** Cystic fibrosis **Keyword 3:** Biomarkers

Title: Is the unbalance between arachidonic acid and docosahexaenoic acid a reversible condition in adults With cystic fibrosis?

Dr. Elisabetta 3149 Teopompi elisabettateopompi@ymail.com MD [1], Dr. Giovanna 14582 Pisi gpisi@ao.pr.it MD [2], Dr. Marina 14583 Aiello marina.aiello@unipr.it MD [1], Dr. Roberta 14584 Pisi roberta.pisi@unipr.it MD [1], Dr. Paolo 29834 Mangano paolo.mangano@unimi.it MD [3], Dr. Francesco 29840 Longo flongo@ao.pr.it MD [2], Dr. Patrizia 29849 Rizè patrizia.risè@unimi.it MD [3], Dr. Candida 29852 Tripodi mtripodi@ao.pr.it MD [2], Dr. Valentina 29853 Fainardi valentinafainardi@alice.it MD [2], Prof. Enrico 29855 Clini enrico.clini@unimore.it MD [4], Prof. Alfredo 29856 Chetta chetta@unipr.it MD [1] and Prof. Angelo 29862 Sala angelo.sala@unimi.it MD [3]. [1] Clinical & Experimental Medicine, Respiratory Disease Unit, University Hospital of Parma, Parma, PR, Italy, 43100 ; [2] Dept of Pediatrics, University Hospital of Parma, Parma, PR, Italy, 43100 ; [3] Department of Pharmacological Sciences, University of Milan, Milan, MI, Italy and [4] Department of Medical and Surgical Sciences and Ospedale Villa Pineta Di Gaiato, University of Modena-Reggio Emilia, Modena, MO, Italy .

Body: In patients with cystic fibrosis (CF), a significant reduction in docosahexaenoic acid (DHA), a fat acid involved in inflammatory changes, may occur. We assessed the arachidonic acid (AA) and DHA metabolites in sputum of 15 CF patients, as compared to 10 COPD patients, and their changes after ten weeks of DHA supplementation. At baseline all subjects were assessed by nutritional status, spirometry, sputum sample to measure leukotriene B4 (LTB4), prostaglandin E2 (PGE2), 15-hydroxyeicosatetraenoic acid (15-HETE), 17-hydroxydocosahexaenoic acid (17OH-DHA), 15-HETE/17OH-DHA ratio, and blood sample to measure DHA/AA ratio and HUFA index. CF patients repeated assessments ten weeks after DHA-supplementation and after ten weeks without. As compared to COPD patients, CF subjects showed increased concentrations of LTB4 ($p < 0.0001$), PGE2 ($p < 0.0001$), 15-HETE ($p < 0.0001$), while the concentrations of the 17OH-DHA was not different in the two groups. Following DHA supplementation, CF subjects had a tendency to decrease in LTB4 and PGE2 and to increase in 17OH-DHA concentrations, and a significant reduction in 15-HETE ($p = 0.0137$). At the end of the washout period, LTB4, PGE2, 15-HETE, and 17OH-DHA recovered toward baseline values. In blood samples after DHA supplementation, DHA/AA ratio and HUFA index significantly increased ($p = 0.05$), while 15-HETE/17OH-DHA ratio significantly decreased ($p = 0.01$) compared to baseline. Our preliminary results have shown that in CF patients an impairment in fatty acid metabolism, characterized by increase in AA metabolites and decrease in DHA, may occur as compared to COPD patients and was partially corrected by DHA supplementation.