

Dietary fat type and asthma

AM Morris¹, PM Clifton², M Noakes², R Schiccitano³

¹ Dept of Physiology, University of Adelaide, SA, 5000

² CSIRO Division of Human Nutrition, PO Box 10041, Gouger St, Adelaide SA 5000

³ Thoracic Medicine, Royal Adelaide Hospital, SA, 5000

The increasing incidence of asthma seen in Australia in the past 30 years has been cause for concern. It has been noted that over this period the level of n-6 polyunsaturated fat (PUFA) in the diet has also increased. Recently it was suggested that these two observations may be linked although there is no clinical or biochemical evidence for this claim (1).

The present study was designed to determine whether changing the dietary levels of n-6 polyunsaturates altered the eicosanoid pathway sufficiently to affect asthma in adults compared with diets enriched with monounsaturates (MUFA) or saturated fat (SAFA). It was hypothesised that a diet high in n-6 PUFA would not cause asthma to worsen when compared with high MUFA or SAFA diets.

Twenty six Caucasian stable asthmatic subjects (10 males, 16 females, aged 22-67 years, BMI 26 ± 1.2 kg/m²) on ≤ 2500 µg/day inhaled corticosteroid medication, completed a 16 week dietary intervention trial during which time they consumed two fat enriched diets for 8 weeks in a random order. All subjects ate an enriched n-6 PUFA diet (32% fat energy, 9% PUFA) and either a high MUFA or SAFA diet in a partial crossover design. At the beginning and end of each intervention fasting blood samples were taken and subjects performed lung function tests. Subjects kept daily records of peak expiratory flows, symptom scores and amount of bronchodilator (BD) medication used.

Respiratory test	Diet Intervention		
	Baseline ¹	PUFA ¹	MUFA ¹
MUFA group (n = 12)			
PC ₂₀ (mg/ml)	4.3 ± 0.9	6.07 ± 0.78 ²	5.5 ± 0.9
Post BD FEV ₁ (L)	3.4 ± 0.3	3.3 ± 0.3	3.3 ± 0.3
SAFA group (n = 11)			
PC ₂₀ (mg/ml)	4.7 ± 0.9	6.5 ± 0.8	6.9 ± 1.6
Post BD FEV ₁ (L)	2.6 ± 0.2	2.5 ± 0.2	2.2 ± 0.3

¹ mean ± SEM

² Denotes significant difference between treatment and baseline values (P < 0.01).

Note 3 subjects did not perform histamine provocation tests.

Forced expiratory volume in one second (FEV₁) levels did not change significantly after n-6 PUFA consumption when compared with the other diets. This result contrasted with significant increases in the dose of histamine required to give a 20% decrease in FEV₁ (PC₂₀), ie the airways were less sensitive to histamine after a high fat diet. These changes were associated with no changes in symptom scores or bronchodilator use. It is concluded that asthma severity, lung function and medication are not influenced by large changes in n-6 PUFAs in adults with stable asthma.

1. Hodge L, Peat JK, Salome C. Increased consumption of polyunsaturated oils may be a cause of increased prevalence of childhood asthma. Aust NZ J Med 1994;24:727.