

# Fatty Acid Profiles of Schizophrenic Phenotypes

Douglas M. Bibus, Ralph T. Holman, William J. Walsh  
91st AOCS Annual Meeting and Expo  
San Diego, California April 25-28, 2000

## ABSTRACT

Affecting 1% of the American population, schizophrenia constitutes a major disease in our society with considerable personal and financial costs. Successful treatment and access to quality health care are often limited for many patients. Recent research has suggested that omega-3 fatty acids may be involved in the etiology and/or treatment of schizophrenia. The objective of the present pilot study was to investigate fatty acid profiles of 40 schizophrenic patients biochemically characterized by the Pfeiffer Treatment Center, Chicago, IL.

Fatty acid profiles for blood lipid fractions of fasting plasma and red blood cells were analyzed. Data were then grouped based on biochemical phenotypes including low-methylation (high blood histamine), high methylation (low blood histamine) and pyroluria (elevated urinary kryptopyrrole). Results of the study indicate decreased levels of docosahexaenoic acid (DHA) in total plasma phospholipids for all schizophrenic groups tested ranging 66 – 75% of control levels. Similarly, total omega-3 was significantly lower for all groups despite normal or near-normal levels of eicosapentaenoic (EPA) and docosapentaenoic acids (DPA). In pyroluric patients, EPA was insignificantly elevated while arachidonic acid (AA) was significantly decreased. Linoleic acid was normal in all three patient phenotypes. Deficits in 20 and 22 carbon omega-3 and omega-6 polyunsaturates were offset by marked increases in palmitic acid.

While significant differences were observed between control and schizophrenic phenotypes, few differences were observed between high- and low-methylated patients. Differences did exist between the pyroluric phenotype and the low- and high-methylated schizophrenic groups. When data from all three phenotypes were grouped, AA was significantly lower for the entire cohort, despite normal levels for under- and over-methylated phenotypes. Collectively, schizophrenia appears to be related to essential fatty acid status, and identification of phenotypes based on chemical markers may offer an additional tool of the investigation and treatment of schizophrenia.

(1,2 The University of Minnesota)  
(3 The Pfeiffer Treatment Center)