Abstract


The fatty acid compositions of erythrocyte and plasma polar lipids in children with autism, developmental delay or typically developing controls and the effect of fish oil intake.

Bell JG, Miller D, MacDonald DJ, MacKinlay EE, Dick JR, Cheseldine S, Boyle RM, Graham C, O'Hare AE.

Nutrition Group, Institute of Aquaculture, University of Stirling, Stirling, UK.

OBJECTIVE: The erythrocyte and plasma fatty acid compositions of children with autism were compared in a case-control study with typically developing (TD) children and with children showing developmental delay (DD).

METHODS: Forty-five autism subjects were age-matched with TD controls and thirty-eight with DD controls. Fatty acid data were compared using paired t tests. In addition, blood fatty acids from treatment-naive autism subjects were compared with autism subjects who had consumed fish oil supplements by two-sample t tests.

RESULTS: Relatively few differences were seen between erythrocyte fatty acids in autism and TD subjects although the former had an increased arachidonic acid (ARA):EPA ratio. This ratio was also increased in plasma samples from the same children. No changes in n-3 fatty acids or ARA:EPA ratio were seen when comparing autism with DD subjects but some SFA and MUFA were decreased in the DD subjects, most notably 24:0 and 24:1, which are essential components of axonal myelin sheaths. However, if multiple comparisons are taken into account, and a stricter level of significance applied, most of these values would not be significant. Autism subjects consuming fish oil showed reduced erythrocyte ARA, 22:4n-6, 22:5n-6 and total n-6 fatty acids and increased EPA, 22:5n-3, 22:6n-3 and total n-3 fatty acids along with reduced n-6:n-3 and ARA:EPA ratios.

CONCLUSIONS: Collectively, the autism subjects did not have an underlying phospholipid disorder, based on erythrocyte fatty acid compositions, although the increased ARA:EPA ratio observed suggested that an imbalance of essential highly unsaturated fatty acids may be present in a cohort of autism subjects.

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