

Abstract

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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.

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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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