

Does the Inflammatory Potential of Diet During Pregnancy Elevate Autism Traits in Offspring?

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Background: Maternal modifiable risk factors, such as diet, are understood to influence autism development through possible inflammatory modulation in utero. However, the inflammatory potential of maternal diet during pregnancy has not been assessed in the autism context. This study examines inflammatory diet during pregnancy in association with autism traits in offspring.

Methods: 475 pregnant women were recruited between 2002-2004 as part of the Vitamin D in Pregnancy study. Women completed the Food Frequency Questionnaire during early (<16 weeks) and late (28-32 weeks) pregnancy, in which the Dietary Inflammatory Index (DII) was calculated, with higher scores indicating elevated inflammatory potential. At 11 years follow-up, offspring were assessed using the Australian Scale for Autism Spectrum Conditions (ASASC), where higher scores lean towards autistic traits.

Results: Across 187 mother-child pairs, early pregnancy DII was positively associated with total ASASC score ($\beta=2.04$, 95% CI:0.056–4.01, $p=0.04$), no significant association was observed in late pregnancy DII ($\beta=1.65$, 95% CI:-0.076–4.05, $p>0.05$). In subscale analyses, early and late pregnancy DII were positively associated with the sensory sensitivity subscale (early: $\beta=0.81$, 95% CI:0.23–1.39, $p=0.006$; late: $\beta=0.82$, 95% CI:0.21–1.43, $p=0.009$), but not in any other subscale.

Conclusions: Higher early pregnancy DII suggests inflammatory diet during this period may influence long-term neurodevelopmental changes. Given the role of elevated maternal inflammation in autism risk, these findings posit diet as a contributor of inflammation in utero and provide basis for future research investigating the interplay between the DII and inflammatory biomarkers during pregnancy in this population.