

Fatty acid composition in blood reflects the quality of dietary fat and carbohydrates in children

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Recently published research in the University of Eastern Finland found that fatty acid composition in blood is not only a biomarker for the quality of dietary fat but also reflects the quality of dietary carbohydrates. For example the proportion of oleic acid was higher among children who consumed a lot of candy and little high-fibre grain products. Earlier studies on the topic have mainly concentrated on the association of the quality of dietary fat with fatty acid composition in blood. In the present study, the association of the quality of dietary carbohydrates with plasma fatty acid composition was investigated for the first time in children.

A higher consumption of candy and a lower consumption of high-fibre grain products were associated with a higher proportion of [oleic acid](#) in blood. One explanation for this finding may be that children who consumed more candy and less high-fibre grain products also consumed more foods rich in [saturated fat](#). Saturated fat, that is known to be harmful to health, has previously been shown to correlate positively with oleic acid intake in Western diet not favoring olive oil.

A higher consumption of candy was associated with a higher estimated delta-9 desaturase that indicates the activity of delta-9-desaturase in liver. A higher intake of carbohydrates has previously been shown to be associated with a higher activity of delta-9-desaturase in adults but the studies on this topic are lacking in children. The delta-9-desaturase is an enzyme that catalyzes the reactions of producing monounsaturated [fatty acids](#) from saturated fatty acids. Thus, it prevents the accumulation of saturated fatty acids in the liver but at the same time it promotes the excretion of fatty acids to the blood stream. The increase in delta-9-desaturase activity may be related to an increased production of saturated fatty acids from

sugar in the liver that is harmful for lipid metabolism.

A higher consumption of vegetable oil-based margarine containing at least 60 percent fat was associated with higher proportions of [polyunsaturated fatty acids](#), linoleic acid and alpha-linolenic fatty acid in blood that is in line with the results of the previous studies in adults and children. A higher consumption of vegetable oil-based margarine was also associated with lower proportions of [saturated fatty acids](#) and monounsaturated fatty acids known to be advantageous to health.

Provided by University of Eastern Finland

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