Keeping up with a healthy milk fatty acid profile require selection

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The effect of various fatty acids and fatty acid groups on human health is under discussion, and results are not unambiguously. However, current knowledge shows that a health-promoting milk fat profile is likely to be obtained by increasing the content of unsaturated fatty acids and reducing the proportion of palmitic acid. From a milk product point of view this would contribute to butter with a softer texture which is easier to spread. The objective of this study was to investigate the genetic impact on the milk fatty acid profile measured as g/100 g total fat for 7 FA fractions and 4 individual FA. Milk samples from all cows in the Danish herd testing scheme were collected from May 2015 to December 2017 and analyzed at a certified laboratory using MilkScanTM FT+/FT600 equipped with special software for predicting 7 FA fractions: saturated FA (SFA), Mono-unsaturated FA (MUFA), Poly-unsaturated FA (PUFA), short chain FA (SCFA), medium chain FA (MCFA), long chain FA (LCFA), and transFA; and 4 individual FA: C14:0, C16:0, C18:0, and C18:1. Heritabilities for test day measurement of the different fractions and individual FA were at the same level (0.08 to 0.16) as heritability for overall fat yield for both Danish Holstein and Danish Jersey. Genetic correlations between the fraction of unsaturated FA and total fat yield were however unfavorable indicating an unfavorable trend for the healthy FA contents unless selected for. Correlations between breeding values for FA (groups and individuals) and the different traits in the Nordic Total merit index were in general below 0.15 for both Holstein and Jersey. This suggest that selection for FA (groups and individual FA) can be carried out without harming other traits in the breeding goal. It is therefore proposed to substitute the present Fat index in the total merit index with and index composed of the FA's weighed together based on their health promoting values and their values in relation to product quality.