Omega-3 and Omega-6 Fatty Acid Profiles in Select Freshwater and Marine Species of Fish in Suriname

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Pregnant women in Suriname heavily consume predatory freshwater fish species that are often mercury-contaminated. Freshwater fish had lower Ω-3 but higher Ω-6 fats composition compared to marine fish species.

Background:

- The Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH) examines the impact of environmental exposures among mother-child dyads in Suriname.
- One in four CCREOH-mothers had hair mercury levels exceeding the USEPA action level (1.1µg/g), most of whom live in the interior region and depend heavily on fish for dietary protein intake.

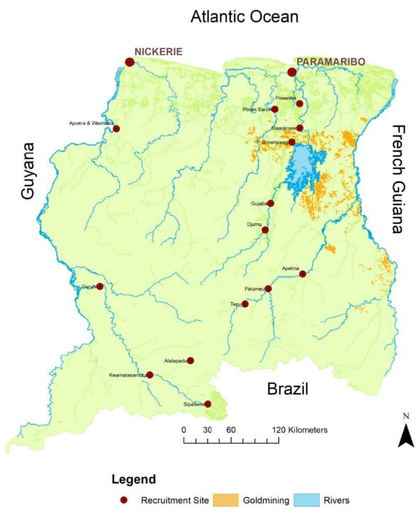

Image 1.
Map of CCREOH sites in Suriname.

Methods:

- Fish dietary questionnaire was used.
- Fatty acid profile in raw dorsal muscle tissue of heavily consumed fish species was measured by total lipid extraction, methylation, using gas chromatography analysis (n=5/species).

Table 1. Summary Statistics of Maternal Fish Consumption (N=1067)

Coastal participants, n (%)	906 (85)
Interior participants, n (%)	161 (15)
Reported to eat fish, n (%)	1026 (96)
Eats carnivorous fish species*	681 (64)
Estimated fish intake per week (in grams) [a]	342 (32-7481)

[a] Variable summary statistic is expressed as: median (minimum-maximum)
*Namely: *C.ocellaris*, *S. rhombeus, H. aimara*, and *P. squamosissimus*

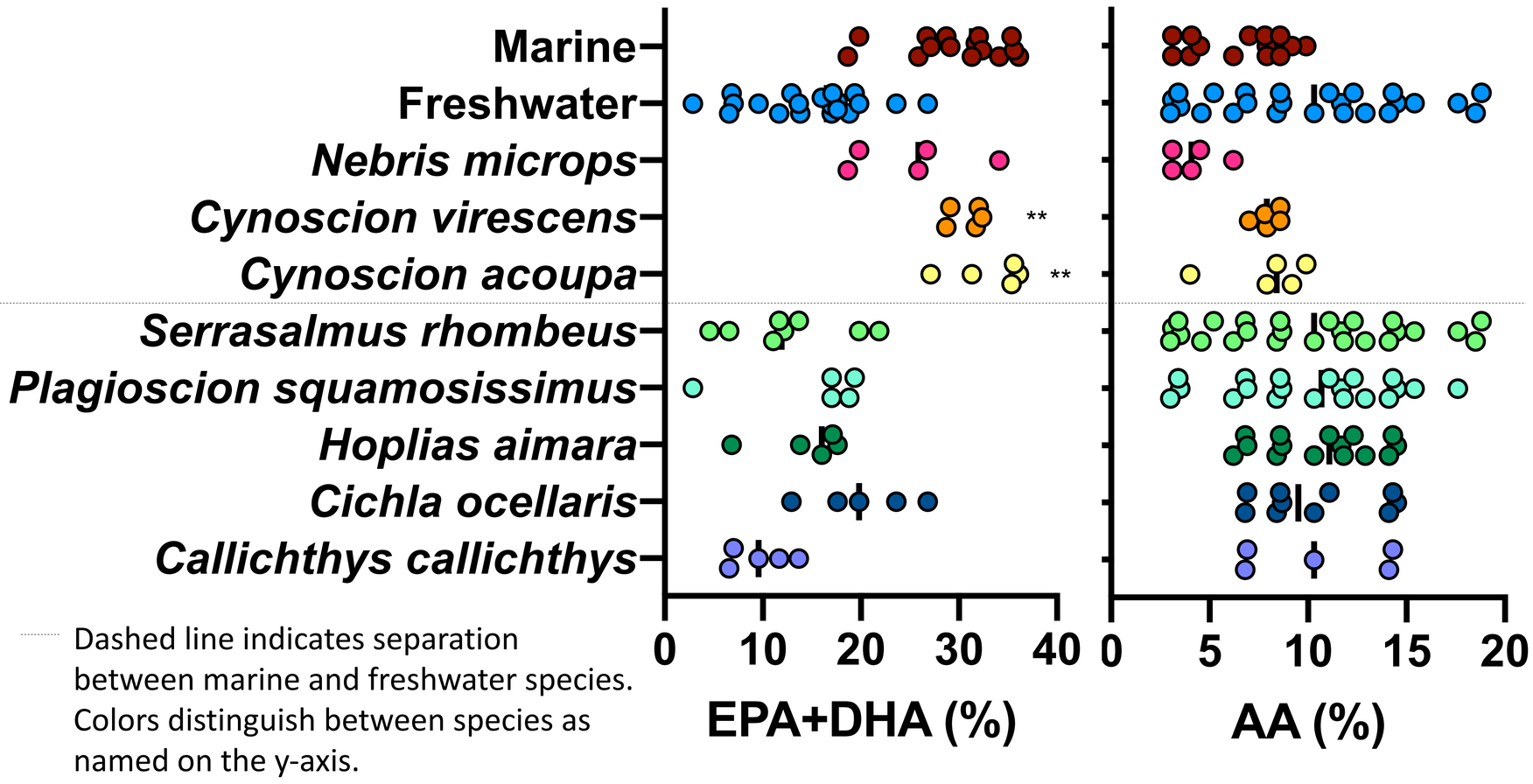

Figure 1. Omega-3 and Omega-6 Polyunsaturated Fatty Acid in Fish
Composition of Ω-3 (EPA+DHA) and Ω-6 (AA) polyunsaturated fatty acids in eight fish species: scatterplot of individual values expressed as % of total fatty acids. Abbreviations used are arachidonic acid (AA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). In marine fish species there was lower AA ($p=0.03$), higher DHA ($p<0.0001$), and higher EPA+DHA ($p<0.0001$) content compared to freshwater fish species, according to Mann-Whitney test. No significant difference in AA content across species ($p=0.1$), but there was significant differences in DHA ($p=0.0003$) as well as in EPA+DHA; ** indicates species with significant differences compared to *C. callichthys* according to Dunns test ($p<0.01$).

Discussion: Nutritional benefit of fish consumption during pregnancy needs to also consider potential risks of prenatal mercury exposure for neurotoxicity.

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