

Microbiota in foods from Inuit traditional hunting

The foods we eat contain microorganisms that we ingest alongside the food. Industrialized food systems offer great advantages from a safety point of view, but have also been accused of depleting the diversity of the human microbiota with negative implications for human health. In contrast, artisanal traditional foods are potential sources of a diverse food microbiota. Traditional foods of the Greenlandic Inuit are comprised of animal-sourced foods prepared in the natural environment and are often consumed raw. These foods, some of which are on the verge of extinction, have not previously been microbiologically characterized. We mapped the microbiota of foods stemming from traditional Inuit land-based hunting activities. The foods included in the current study are dried muskox and caribou meat, caribou rumen and intestinal content as well as larval parasites from caribou hides, all traditional Inuit foods. This study shows that traditional drying methods are efficient for limiting microbial growth through desiccation. The results also show the rumen content of the caribou to be a highly diverse source of microbes with potential for degradation of plants. Finally, a number of parasites were shown to be included in the biodiversity of the assessed traditional foods. Taken together, the results map out a diverse source of ingested microbes and parasites that originate from the natural environment. These results have implications for understanding the nature-sourced traditional Inuit diet, which is in contrast to current day diet recommendations as well as modern industrialized food systems.

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The microbial composition of dried fish prepared according to Greenlandic Inuit traditions and industrial counterparts

The practices of preparing traditional foods in the Arctic are rapidly disappearing. Traditional foods of the Arctic represent a rarity among food studies in that they are meat-sourced and prepared in non-industrial settings. These foods, generally consumed without any heating step prior to consumption, harbor an insofar undescribed microbiome. The food-associated microbiomes have implications not only with respect to disease risk, but might also positively influence host health by transferring a yet unknown diversity of live microbes to the human gastrointestinal tract. Here we report the first study of the microbial composition of traditionally dried fish prepared according to Greenlandic traditions and their industrial counterparts. We show that dried capelin prepared according to traditional methods have microbiomes clearly different from industrially prepared capelin, which also have more homogenous microbiomes than traditionally prepared capelin. Interestingly, the locally preferred type of traditionally dried capelin, described to be tastier than other traditionally dried capelin, contains bacteria that potentially confer distinct taste. Finally, we show that dried cod have comparably more homogenous microbiomes when compared to capelin and that in general, the environment of drying is a major determinant of the microbial composition of these indigenous food products.

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