

Seasonal and prehistoric halite salt consumption through $^{87}\text{Sr}/^{86}\text{Sr}$ analysis of tooth enamel

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The use of $^{87}\text{Sr}/^{86}\text{Sr}$ as a tool for provenancing the natal origins of prehistoric individuals is only as good as the elucidation of the multi-component origin of the sources that the averaged $^{87}\text{Sr}/^{86}\text{Sr}$ in tooth enamel represents. We know that salt (NaCl-halite) enjoys varying degrees of preference in human diets, and that where available, people in prehistory did make use of this source. There are indications that salt consumption can offset the $^{87}\text{Sr}/^{86}\text{Sr}$ measured in tooth enamel towards that of the salt, which can obscure the natal locality of the individual [1]. To examine this, we present a pilot study of the seasonal use of halite from Mongolia, and the degree to which the seasonal return to this resource is visible in the tooth enamel of the herded bovids and caprids.

The halite consumed by the herd is an evaporite deposited on the shores of Ürüm Lake, close to the Russian-Mongolian border. The lake is a fixture of the seasonal round of community of Mongolian herders. Both the animals and herders consume this halite (known to them as *hujir*) as a dietary supplement or as a medicine. This equivocal place of salt in the diet parallels that of the Roman *garum*, or salt preserved fish sauce, that enjoyed wide popularity across the Mediterranean during antiquity.

The $^{87}\text{Sr}/^{86}\text{Sr}$ variation along the growth axis of the tooth enamel was measured by LA-MC-ICPMS. Sr isotopic variation along the growth axis of the tooth enamel did vary in keeping with a seasonal pattern, approaching the $^{87}\text{Sr}/^{86}\text{Sr}$ of the lake halite (0.705807 ± 0.00005), suggesting that the halite was not the primary source of the strontium in the diet of the herd. Further characterization of the halite salt sources is needed to establish halite consumption in prehistory.

[1] Fenner & Wright (2014) *J. Archaeol. Sci.* **44**, 99-103.