CEREAL FOR BREAKFAST?

Direct evidence of grass in the diet of Later Stone Age people

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The value of grasses to the human race is immeasurable. Grasses provide all the cereal crops, such as wheat, rice, maize and most of the world’s sugar, including that favorite breakfast cereal we enjoy every morning. The cultivation of cereal grasses is a phenomenon of at least the last 12 000 years of human existence and in southern Africa possibly the last 2 000 years. Archaeological evidence suggests that cereal agriculture and stock-keeping were practiced by Bantu-speaking people as early as 2 000 years ago in the north-eastern and extreme eastern parts of the summer rainfall zone of southern Africa. On the other hand, Later Stone Age hunter-gatherer societies, occupying caves and rock shelters seaward of the Cape Fold Mountains during the last 10 000 years are known to have followed different subsistence strategies, which involved mainly the gathering of fruits and nuts (certain underground edible corms). Year-round food resources such as tortoises and shellfish were also collected, while small antelope were hunted occasionally.

But what about something as ubiquitous as wild grass? According to historical records the term boesmangras - which today generally refers to the genus Stipagrostis - was first coined by Dutch trekboers in the northern Cape during the 1700s when they referred to the use made of it by San people who ate its seeds. It is now common knowledge that the reproductive parts of certain grass species are highly nutritional (e.g. wheat, sorghum and maize), but there is little, if any, direct evidence that Later Stone Age people actually exploited wild grasses as a food source.

Fortunately, grasses are, like many other plant types, prolific producers of phytoliths (“plant stones”). Phytoliths are distinctive, microscopic, opal-silica bodies that occur abundantly in specialized epidermal cells of grasses. The sizes of grass phytoliths generally vary between 5 and 40 micron (1 micron = 1 thousandth of a millimeter). These silica particles do not perish easily and can remain intact for long periods under variable environmental conditions. Not only do they preserve well, but grass phytoliths are also very diagnostic of particular plant species.

Lack of proper dental care can create particularly favourable conditions for the preservation of phytoliths in tartar. We all know what happens when we do not brush our teeth regularly: plaque forms. Plaque is a soft, sticky substance that accumulates on the teeth and is formed from food particles suspended in saliva. When plaque hardens, it becomes tartar. The main ingredient of this compound is calcium phosphate. Tartar, also known as dental calculus, is a hard, crusty deposit that bonds to the tooth enamel along the gum line. It is a yellow or brownish mixture of minerals in the saliva, dead plaque bacterial cells and food particles that include phytoliths released from plant matter. Prehistoric people most likely did not have something as unexciting as oral hygiene high up on their list of priorities. For that reason (if preservational conditions are favourable), the chances of finding intact tartar on fossilized human dentition are very good.

Map showing the locality of the Matjes River Rock Shelter.
A fossilized jawbone, with tartar bands on both sides of its dentition, was selected from an archaeological collection of excavated skeletal remains housed at the National Museum. The specimen forms part of a larger assemblage of skeletal material excavated at the Matjes River Rock Shelter during the 1920s and 1950s. This shelter is situated on the western bank of the Matjes River about 400 meters from the mouth and about 1 km east of Keurboomstrand. The skeletal material belongs to Later Stone Age hunter-gatherers who occupied the rock shelter 8,000 to 2,000 years ago.

Tartar adhering to the teeth above the gumline of the Matjes River specimen was gently scrubbed with distilled water, using a soft brush to remove dust particles and contaminants. Tartar concretions were then lifted off the tooth enamel with a dental pick. The loose tartar was dissolved in diluted hydrochloric acid and rinsed. Phytoliths were extracted from the residue by a process of mineral separation and examined under a microscope.

The results show a clear presence of grass-type phytoliths trapped in the tartar. Also, given the time it takes for plaque to become tartar, it is evident that grass material was regularly ingested by this individual. The evidence suggests that, although the hunter-gatherers from Matjes River did not deliberately cultivate cereal grasses for consumption, wild grasses most likely formed a noteworthy component in their diet. This is also further proof that harvesting and consumption of wild grasses by San hunter-gatherers can probably be traced back to prehistoric times.

References


