# Miliacin in palaeosoils and sediments, a powerful biomarker for telling stories about broomcorn millet

B. Courel[1,*], P. Adam[1], P. Schaeffer[1], J. Jacob[2,‡]
[1]Institut de Chimie de Strasbourg, Université de Strasbourg, CNRS, UMR 7177, Strasbourg, France
[2]Institut des Sciences de la Terre d'Orléans, Université d'Orléans, ISTO, UMR 7327, Orléans, France
[*]Present address: The British Museum, London, United Kingdom
[‡]Present address: LSCE, UMR CEA-CNRS-UVSQ – CEA/Saclay, Gif-sur-Yvette Cedex - France

The introduction of domesticated plants and cereals in Europe induced deep and lasting transformations in past societies. While broomcorn millet (*Panicum miliaceum*) was thought to have been adopted, in the first time, in Europe, by Neolithic communities, such early event is, nowadays, challenged. In that context, new initiatives are developed to assess the timing and the diffusion path of the spread and adoption of millet across the European continent. If a major dating program is currently ongoing to provide new direct dates on archaeological grains, grains of broomcorn millet are sometimes absent of carpological records due to biodegradation and preservation issues. As a result, complementary approaches are needed to identify millet crops and structures related to such agricultural activity at the scale of an archaeological site or a catchment. In that regard, palaeosoils and sediments can represent a rich source of information. Indeed, they can have trapped and preserved over time organic markers (lipids) that are specific to a past vegetation. In the case of broomcorn millet, miliacin, a specific molecular biomarker developed more than a decade ago (1), has offered great opportunities to trace the former presence of millet in palaeosoils and sediments. Miliacin is considered resistant to diagenesis and its specific relationship to common millet has been addressed (2). It has been detected in the sediments of several alpine lakes, thus allowing us to discuss the timing of millet diffusion in this region and the pattern of its consumption. It has also been found in soil filling archaeological structures from an archaeological site at Obernai, in Alsace (3) as well as in a palaeosoil in eastern Ukraine (4), giving evidence that millet was cultivated in the latter regions during the Bronze and Iron Age respectively. The two first examples will be discussed to give a state of art of possibilities and limitation that provide geochemical analysis for the identification, dating and dynamics of ancient millet crops.

**Reference**

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