From maize oil to murder
The diverse applications of sophisticated chemical analyses

Overview
A suite of sophisticated molecular and stable isotopic techniques developed by organic chemists at the University of Bristol has proven to be a powerful diagnostic tool for analysing organic materials.

Originally developed to look at organic residues on archaeological materials, these analytical techniques are also proving useful in food science and forensics.

In the 1990s, Richard Evershed, Professor of Biogeochemistry, and his colleagues in the School of Chemistry, recognised that by combining molecular information with compound-specific isotopic signatures from organic residues, they could help answer fundamental questions about early human culture. Their analyses of residues left on ancient pottery have provided chemically-based evidence that dairying in Europe and the Near East dates nearly 9,000 years, which is 2,000 years earlier than previously thought.

These findings have furthered our understanding of early human interactions with animals and captured the attention of the public. Evershed has found that applying these same analytical tools in other areas has been equally impactful.

In 1995, he and his colleagues were approached by the UK food industry to develop techniques for detecting adulteration in commercial maize oil.

The authenticity of vegetable oil products is a serious issue within the food industry as the adulteration of high quality oils with lower quality oils not only...
Key facts:

- Scientific analysis has proven that dairying in Europe and the Near East dates back nearly 9,000 years, which is 2,000 years earlier than previously thought.

- Improved methods developed by Bristol scientists to detect adulterated commercial maize oil showed that of 61 samples collected in 2001, none were adulterated with more than 5 per cent undeclared oil, compared with 35 per cent in 1995.

- Professor Evershed's techniques are referenced in the Codex Alimentarius Commission standards (Codex Standard 210-1999), a global reference point for consumers, industry, national food control agencies and the international food trade.

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