

Honey, as the “time capsule” of long term environmental change - rape, sun- and multifloral bee products

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Our former study highlights that acacia honey can be successfully applied for long-term environmental assessment as old samples keep inorganic compounds preserved as well as they serve as a proper material for radiocarbon dating. Good agreement was observed between the radiocarbon activity of the acacia honeys and the atmospheric bomb-peak that was used for calibration.

In present study the time-dependent elemental composition and AMS dating results of 36 grape, sunflower and multifloral honey samples are presented, collected between 1985 and 2018 in geographically close locations. Based on the elemental analysis we concluded that bee products regardless the type provide useful environmental information of the previous decades, such as the decreasing trend of airborne Pb emission can be traced. However, radiocarbon results agree less with the atmospheric bomb peak. Random offsets were observed in the specific radiocarbon activity of the honey samples.

Present study indicates that rape and sunflower honey samples are not as reliable materials for radiocarbon dating as acacia honeys. Thus, the complex application of honey samples for environmental reconstruction requires the species-separated investigation of bee products to reveal their adaptability for assessment approaches.

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