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A Historical Apothecary Cabinet: Towards Understanding the Composition of the Powdered Contents

The National Museum of Slovenia houses a walnut apothecary travelling cabinet with wrought-iron fittings, dated to the 17th or 18th century. The cabinet contains fourteen compartments of varying shapes, a concealed drawer, several original metal and one ceramic container, and fourteen paper bags containing visually different powdered materials. To better understand the nature and composition of these powders, nine representative samples were analyzed in collaboration between the Faculty of Chemistry and Chemical Technology, University of Ljubljana, and the National Museum of Slovenia.

A multi-analytical approach was applied to provide a comprehensive characterization of the samples. Handheld X-ray fluorescence (XRF) was used to determine elemental composition, while Fourier-transform infrared spectroscopy with attenuated total reflectance (FTIR-ATR) provided information on the presence of functional groups. And additionally, headspace solid-phase microextraction coupled with gas chromatography and mass spectrometry (SPME-GC-MS) was used to investigate the potential presence of volatile organic compounds.

The analyses consistently indicated that the powders are inorganic in nature. Tin was identified as the dominant element, with additional occurrences of calcium, iron, and traces of lead. No organic functional groups were detected with FTIR-ATR, and SPME-GC-MS did not reveal volatile organic compounds. These results suggest that powders cannot be associated with organic pharmaceutical ingredients.

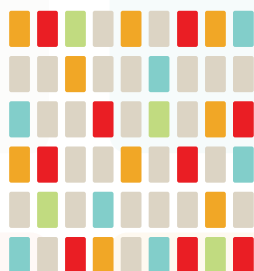
Although the absence of organic compounds limits direct insight into historical formulations, the results provide a clearer picture of the material content of the box, support informed conservation decisions, and illustrate the benefits of interdisciplinary collaboration in advancing the study of pharmaceutical heritage.

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