ELECTRON MICROPROBE STUDY ON INCLUSIONS IN GALLSTONE: PRELIMINARY RESULTS

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In this work we present the preliminary data obtained by electron microprobe analyses on small particles included in a gallstone. The studied gallstone, yellow-brownish in colour, has a rounded shape with a diameter of about 2 cm. It was surgically extracted from a female patient, 72 years old. The gallstone was longitudinally sectioned and two pieces were obtained. One of them was polished and, prior to examination by electron microprobe, the polished surface was carbon coated. Wavelength dispersive qualitative analyses, carried out in the groundmass, revealed the presence only of oxygen. However, another lighter element that can not be detected by electron microprobe, such as H, can be present. This observation suggests that the gallstone is probably composed of cholesterol. The polished surface of the gallstone was examined by electron microscope, which allowed the finding of several particles included in the groundmass. These inclusions have an irregular shape, with a size variable from about 10 up to 60 microns. According to the energy dispersive system qualitative analyses, most of them consist of pure Ca. However several compounds containing S, Cl, K, Ca, Mg, Na and Si in different proportion have been also identified. In these latter compounds also tiny particles (less than 10 microns) of nicely shaped crystals of Ca and irregular spot of Cu have been found. Our data, although preliminary, suggest that electron microprobe can be considered an efficient tool to investigate gallstones, with special regards to their inclusions and, as a consequence, to evaluate the presence of certain elements.

Keywords: gallstone, inclusions