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Titel des Beitrags: Element bioimaging of liver needle biopsy specimens from patients with Wilson’s disease by laser ablation-inductively coupled plasma-mass spectrometry.

Abstract: A laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) method is developed and applied for the analysis of paraffin-embedded liver needle biopsy specimens of patients with Wilson’s disease (WD), a rare autosomal recessive disorder of the copper metabolism causing various hepatic, neurological and psychiatric symptoms due to a copper accumulation in the liver and the central nervous system. The sample set includes two WD liver samples and one negative control sample. The imaging analysis was performed with a spatial resolution of 10 μm. Besides copper, iron was monitored because an elevated iron concentration in the liver is known for WD. In addition to this, both elements were quantified using an external calibration based on matrix-matched gelatine standards. The presented method offers low limits of detection of 1 and 5 μg/g for copper and iron, respectively. The high detection power and good spatial resolution allow the analysis of small needle biopsy specimen using this method. The two analyzed WD samples can be well differentiated from the control sample due to their inhomogeneous copper distribution and high copper concentrations of up to 1200 μg/g. Interestingly, the WD samples show an inverse correlation of regions with elevated copper...
concentrations and regions with high iron concentrations.

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