Diffraction enhanced imaging of rat kidney

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【**Abstract**】 **Objective** The purpose of this study was to explore the potential of diffraction enhanced imaging （DEI） of rat kidney . **Methods** The dissected kidney of rats with the thickness of 2mm and 120μm were imaged by X-ray diffraction enhanced imaging at the Beijing Synchrotron Radiation Facility (BSRF). Histologic slides of the specimens were made after imaging and compared with the diffraction enhanced imaging of the specimens. **Results** The straight collecting ducts and papillary tubules that can't be detected by conventional radiography are visible clearly down to approximately 30μm by DEI in dissected kidney of rats. The artry and vein that can only be detected through are visible clearly by DEI, too. **Conclusion** The results suggest that DEI with synchrotron X-ray has the potential to be of use in the study of micro lesion of renal medulla and vessel. This technique provides a new way of imaging a property of biological tissues not yet exploited.

【**Key words**】 X-ray, diffraction enhanced imaging, kidney