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## Characterizing kidney structures in health and diseases by eosin-fluorescence of haematoxylin and eosin-stained tissue sections

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For a long time Haematoxylin and Eosin (H&E) staining has been widely used for diagnosis of many diseases by looking at the histopathological changes in tissue sections. Eosin, one of the staining dyes in the H&E stain, is fluorescent in the FITC and TxR fluorescent channels. In this study, we elucidate the use of eosin fluorescence to visualize molecular histopathological changes in the glycerol-induced model of acute kidney injury (AKI) in mice. AKI was induced in BALB/c mice by intra-muscularly injecting 10 mL/Kg b.w. of 50% Glycerol after 24 hours of water deprivation, followed by dissection of kidney after 24 hours. Kidney tissue sections were examined under a fluorescent microscope using double channel filter cube (FITC and TxR) after H/E staining. First we characterized the fluorescence pattern of normal kidney structures as the fluorescence patterns varied between different parts of the kidney. Interestingly, in injured kidney sections, we noticed a striking increase in the red fluorescence in the damaged areas. In the damaged kidney, casts was deposited inside tubules, which showed bright yellow fluorescence whereas fibers showed strong green fluorescence. We also performed *in vitro* experiments in order to understand possible mechanisms underlying this phenomenon. We concluded that eosin fluorescence can be used to quantify the degree of damage to the tissue which in turn may help in assessing the kidney-protective effect of unknown compounds and plant extracts and to diagnose kidney pathology.

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