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Ethanol fixation method for *ex-vivo* heart and lungs imaging in micro-CT

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During past years, several staining methods were developed in order to increase the contrast of soft tissues. However, most of these methods are complicated, time-consuming and use toxic contrast agents. One of the best and mostly used contrasts agents for soft tissue imaging are aqueous solutions of osmium tetroxide, phosphomolybdic acid (PMA) or phosphotungstic acid (PTA). Osmium tetroxide is very toxic, does not stain well if samples have been in alcohol and also its penetration is slow. PTA penetrates tissues slowly also, but it is less toxic, simpler to use and effectively stains alcohol-stored samples. PMA gives better contrast among different tissues, but requires longer incubation; conversely, its contrast between different tissues was superior. Our goal was to create a simple, cheap and stable fixation method for *ex-vivo* soft tissues scanning in micro-CT, a method which would give sufficient contrast among soft tissues in organs. Ethanol provided contrast enhancement in both studied organs in all used types of fixation. Fixation in 97% ethanol enhanced contrast among the tissues already after 72 hours, however, it caused hardening of the organs and in some cases even rupture of the specimens. Fixation in 50% ethanol provided best results after 336 hours, and details were not visualized as well as in 97% ethanol; conversely, samples were not that stiff. Best results provided fixation in a row of ascending ethanol concentrations; all organs were visualized in great details without being damaged.

Biography

Jana Mrzílková has completed her MD and Post-doctoral studies from Charles University, Prague, Czech republic. She is the Director of Experimental Micro CT laboratory at Third Faculty of Medicine, Charles University, Prague, Czech republic. She has published more than 8 papers in reputed journals and has been also involved in neuroscience research.

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