Anomalous diffusion gamma-imaging to assess spinal-cord microstructure.

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Water in biological tissues experiences a non-Gaussian motion, with a restricted or hindered diffusion, due to macromolecular crowding and multi-compartmentalization. Recently we have proposed a new method to experimentally quantify parameters coming from anomalous diffusion, such as the gamma-parameter, which we showed to be influenced by magnetic susceptibility differences. Here we evaluate this parameter in fixed mouse spinal cord, and show that the derived anisotropy and radial value correlate with the structural characteristics of distinct white-matter tracts. These results corroborate previous findings in non-biological phantoms, and open new perspectives concerning the possibility to perform high-resolution non-Gaussian diffusion measures *in-vivo*.