

CORTICAL CONNECTIONS OF TWO SPECIES OF NEOTROPICAL NON-HUMAN PRIMATES (*Alouatta caraya* AND *Sapajus apella*) EVIDENCED BY MAGNETIC RESONANCE TRACTOGRAPHY

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Introduction: Viruses infect the central nervous system (CNS) of non-human primates (NHP) and humans, inducing diseases. Knowledge about the normal organization of the NHP's CNS is relevant for surveillance of epizootics, in order to facilitate identification of changes due viral infections and, therefore, support decision-making on disease control. In Brazil, this type of surveillance is justified as we have the greatest diversity of NHP in the world, with 110 species currently known, of which 69 are endemic, many inhabiting cities surroundings.

Aims: To investigate whether the resolution of magnetic resonance (MR) tractography can be useful to evidence normal organization and distribution of cortical connections in NHP's CNS.

Methods: This study was approved by the Ethics Committee on the Use of Animals at Instituto Evandro Chagas (Certificate no 07/2018) and by the Authorization and Information System on Biodiversity (Authorization no 63524-1). Two adult NHPs (*Sapajus apella* and *Alouatta caraya*) belonging to Centro Nacional de Primatas were examined. The NHPs were sedated with 0.2 ml of Zoletil® (Tiletamine + Zolazepam). Saphenous vein puncture provided fluid therapy. Propofol was used along induction (2 mg/kg) and maintenance (0.4 mg/kg/min) phases. NHPs were kept under spontaneous ventilation. Imaging protocol followed a ~50 min scan sequence: Sagittal T1; Axial Flair, T2 and diffusion; Coronal T2 and T1 Fat Post; Sagittal Fat Post, with slices 20 to 23x5 mm and 0.5 GAP in Brivo MR355 1.5T (GE Healthcare, UK). Using 3D Slicer software and the UKF tractography data rendering Python package, we calculated tractography from DWI data using an unscented Kalman filter.

Results: Images evidence in both hemispheres the corticopontine, corticothalamic, corticospinal, inferior and superior longitudinal fibers, and posterior commissures, all better observed in *S. apella*.

Conclusion: Resolution of MR tractography can evidence detailed NHP's SNC cortical connections, having therefore a great potential within the epizootic context.

