Purification and characterization of the high molecular weight microtubule associated proteins from neonatal rat brain

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The changes in the levels of microtubule-associated proteins (MAPs) during advanced embryonic stages, neonatal and adult organisms reflect the importance of these cytoskeletal proteins in relation to the morphogenesis of the central nervous system. MAP-1B is found in prenatal brains and it appears to have the highests levels in neonatal rat brains, being a developmentally-regulated protein. In this research, a fast procedure to isolate MAP-1B, as well as MAP-2 and MAP-3 from neonatal rat brains was designed, based on the differential capacity of poly L-aspartic acid to release MAPs during temperature-dependent cycles of microtubule assembly in the absence of taxol. The high molecular weight MAP-1B was recovered in the warm supernatants after microtubular protein polymerization in the presence of low concentrations of polyaspartic acid. Instead, MAP-2 and a 180 kDa protein with characteristics of MAP-3 remained associated to the polymer after the assembly. Further purification of MAP-1B