J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI: 10.4172/2161-0460-C6-052

R-SMAD dependent TGFβ signalling mediates TGFβ induced effects on microglia

Phani Sankar Potru
Institute of Anatomy, Germany

Microglia are the resident immune cells of the central nervous system (CNS) which are exclusive conciliators of immune responses in CNS. Previously, it has been shown that TGFβ1 signalling is crucial in maintaining the resting state of microglia and that it also blocks LPS induced microglia activation. Microglia are also associated with ageing in which changes in microglia gene expression is also linked to ageing where they are reported to be performing immunosuppressive and immune tolerant functions. It is well established that TGFβ1 signaling requires formation of a complex between R-SMADs 2 and 3 and Co-SMAD4. However, our previous results suggested that microglia specific TGFβR2-/- results in impaired pSMAD2 mediated transcription but not in SMAD4-/- mouse model. To address this discrepancy, we performed subcellular fractionation and Co-immunoprecipitation analysis of BV-2 immortalized murine microglial cell line. Western blot analysis of protein fractions demonstrated the presence of pSMAD2 and SMAD2/3 in all the fractions. However, SMAD4 was undetectable in chromatin fraction despite the presence of SMAD2/3. The Co-IP results suggested a weak Smad 2/3 and Smad4 interaction irrespective of treatment. Non canonical pathway analysis was performed using PathScan Intracellular Signaling Array Kit. Surprisingly, no non-canonical pathway activation was detected in BV2 cells upon stimulation with TGFβ1. Taken together, our data suggests that SMAD2/3 and SMAD4 are not necessarily interacting with each other upon stimulation with TGFβ1 in microglia. Our initial results also suggested a lack of non-canonical pathway activation in BV2 cells.

PhaniSankar.Potru@med.uni-rostock.de