Endosomal abnormalities related to amyloid precursor protein in cholesterol treated cerebral cortex neuronal cells derived from trisomy 16 mice, an animal model of Down syndrome

Arriagada, Christian

Astorga, César

Atwater, Illani

Rojas, Eduardo

Mears, David

Caviedes, Raúl

Caviedes, Pablo

The CNh and CTb cell lines are derived from the cerebral cortex of normal and trisomy 16 mice, an animal model of human trisomy 21, Down syndrome (DS), and represent in vitro models to study cellular events associated with the human condition. Amyloid precursor protein (APP) plays an important role in the development of neuropathology associated with DS and cholesterol in the amyloidogenic processing of APP. There is also increasing evidence of alterations in the recycling pathway of the early endosome compartment in nervous tissue from DS. In the present study, we report endosomal abnormalities related to amyloid precursor protein in cholesterol-treated CTb cells. Colocalization studies revealed the presence of APP-derived products in early endosomal compartments in both cell lines. Using internalization and immunoprecipitation techniques, differential effects were observed between the normal and trisomic cell lines when treated with cholesterol. Internalization experiments showed tha