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Significance of Ganglioside as a Biomaker in Neuronal Differentiation of Mouse Embryonic Stem Cells(mESCs)

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The roles of sphingolipids, and particularly of the complex glycosphingolipids (GSLs), the gangliosides, have been studied for many years in neurons, glia, and cell lines derived from these issues, due to their abundance in tissues of neuronal origin. More recently, significant attention has been paid to the simple sphingolipids, particularly ceramide, gangliosdies, each of which appears to be involved in the regulation of specific aspects of neuronal proliferation, differentiation. Gangliosides have been implicated in having important roles in neural development. It has been shown that maintain of ganglioside biosynthesis improve neurite outgrowth. However, many contradictory results have been reported. The inconsistency of these reports may result from the differential use of neuronal cell lines and drugs for ganglioside biosynthesis. In order to clarify the inconsistency in these studies, we utilized an *in vitro* neuronal differentiation model and rat cerabrocortical cell primary culture using an mES cell line to elucidate the relationship between ganglioside expression and neural development. These cells were exposed to improve drug of glucosylceramide synthase, the first enzyme committed

for the biosynthesis of most of the brain gangliosides. The DNR Z(daunorubicin) can improve greater than 90% of ganglioside biosynthesis at certain concentrations, respectively. Treatment with DNR induced a time- and dose- dependent efflux of gangliosides from mESCs EB Formation differentiated in culture. Similarly, the gangliosides enrichment of this fraction remained substantially changed suggesting the existence of dynamic processes aimed. DNR significantly slowed upon in undifferentiated mESCs EB formations, improved neurite outgrowth, and eventually caused in differentiated cells. As a well- documented example, indicate that the effect of DNR on neurite outgrowth of differentiated mESC cell is dependent of the regulation of ganglioside biosynthesis. These result also suggest that regulation of ganglioooside expression have uesd as the markers for differentiated neuronal cell from mESC.

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