Original Paper

Distribution of Glycoconjugates terminal sugars during neurohypophysis development in Rat

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Abstract

Background and Objective: The neurohypophysis originates from the floor of diencephalon. Its development controls by several cellular interactions that mediated by some molecules such as cell surface and extra cellular matrix Glycoconjugates terminal sugars. In this study we used lectin histochemical technique to evaluate distribution of the Glycoconjugates and their changes during development of neurohypophysis.

Materials and Methods: This experimental study carried on 40 female and 20 male adult Rats. After mating and appointment day zero of pregnancy, pregnant Rats were sacrificed from days 10-20 of gestation and their embryos were collected for histochemical study. The serial section of head specimens were fixed and incubated with different HRP-lectins from Orange fungus (OFA) Vicia villosa (VVA), Glycine max (SBA), Wistaria floribunda (WFA), peanut (PNA), Griffonia simplicifolia (GSA1-B4), Lotus tetragonolobus (LTA) and Ulex Europeus (UEA-1). OFA, LTA and UEA-1 lectins are specific for terminal sugars α-L-Fucose and WFA, SBA, VVA and PNA are specific for D-GalNAc, α, β-D-GalNAc and GalNAc, D-Gal– (β-1-3)- D-GalNAc of complex glycoconjugates respectively.

Results: Our findings demonstrated that the reaction of neurohypophysis cells with OFA initiated from gestational GD10 and increased to GD15 (P<0.05) and then increased to GD17 (P<0.05). A few cells of neurohypophysis reacted with PNA from GD13 to GD16 and decreased afterward (P<0.05). Some cells of neurohypophysis reacted with SBA from GD14 to GD18 and decreased afterward (P<0.05). Reacting of many cells of neurohypophysis with WFA started on GD13 and increased to GD15 (P<0.05) and then decreased afterward (P<0.05). Neurohypophysis cells showed no reaction with the UEA-1, LTA, VVA and GSA1-B4 lectins.

Conclusion: The expression of Glycoconjugates with terminal sugars α-L–Fucose, α, β-D-GalNAc and D- Gal– (β-1-3)- D-GalNAc have important role and special spatiotemporal situation in neurohypophysis development.

Keywords: Neurohypophysis, Development, Glycoconjugates, Lectin, Rat

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