

Summary in English language

Introduction

Thyroid hormones are necessary for the development of many organs and systems in the body, including the central nervous system. The association between thyroid function and development of the brain is well known, depressed function of thyroid gland and its lower production can lead to various neurological deficits and disorders. During the development of the fetus it can result to mental retardation, ataxia and blindness.

Methods

Slco1c1-Cre mice were anesthetized and perfused. After their decapitation brains were carefully dissected and fixed in 4% PFA at 4°C for 4-12 hours and then transferred into 30% Sucrose solution for 24 hours. Sections were prepared with cryotome, collected on the slides covered with polysine and into two series. They were parallelly stained with lacZ staining and Nissl staining. LacZ showed the expression of Slco1c1-Cre, Nissl staining was performed as additive staining and distinguished different structures in the brain. The expressions were observed under the microscope and were evaluated in tables. The presence of Slco1c1 was observed similarly in P2 generation.

Results

Both staining methods were standardized, incubation time was settled for lacZ staining and the performance of Nissl staining was improved.

The strongest expression of lacZ was found in choroid plexuses of ventricles and circumventricular organs. High expression was observed in olfactory bulb and hippocampus - organs of the neurodevelopment maintaining throughout whole life in adults. Expression was found also other structures e.g., in cerebral cortex and parts of thalamus, amygdale.

Expression in P2 was similar to that in adults.

Conclusions

Results suggest that thyroid hormones and their transporters play important roles early in fetal development. Oatp1c1 is an important T4 transporter in the brain. Its expression in neurons (or its progenitors) may suggest a role of Oatp1c1 in neurogenesis during development.

