

（様式4）

学 位 論 文 の 内 容 の 要 旨

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（学位論文のタイトル）

In Utero and Postnatal Propylthiouracil-Induced Mild Hypothyroidism Impairs Maternal Behavior in Mice

（胎内および出生後のプロピルチオウラシルによる軽度甲状腺機能低下はマウスの母性行動を障害する）

（学位論文の要旨）

Thyroid hormones (THs) play crucial roles in general and brain development. Even if the hypothyroidism is mild, it may alter brain function, resulting in irreversible behavioral alterations. Although various behavioral analyses have been conducted, the effects of propylthiouracil (PTU) treatment during in utero and postnatal periods on maternal behavior have not yet been studied. The present study examined in mice whether THs insufficiency during development induce behavioral changes. Pregnant C57BL/6j mice were divided into three groups, and each group was administered different dosages of PTU (0, 5, or 50 ppm) in drinking water during in utero and postnatal periods (from gestational day 14 to postnatal day 21). First, locomotor activity and cognitive function were assessed in the offspring at 10 weeks. Next, female offspring were mated with normal mice and they and their offspring were used to assess several aspects of maternal behavior (identifying first pup, returning all pups to nest, time spent nursing, and licking pups). As expected, locomotor and cognitive functions in these mice were disrupted in a PTU dose-dependent manner. On postpartum day 2, dams who had been exposed 50 ppm PTU during in utero and postnatal periods displayed a significantly longer time identifying the first pup and returning all three pups back to the nest, less time nursing, and decreased licking behavior. The decrease in maternal behavior was significantly correlated with a decrease in cognition. These results indicate that insufficiency of THs during in utero and postnatal periods impairs maternal behavior, which may be partly induced by impaired cognitive function.