Medical Xpress

Lack of happiness hormone serotonin in the brain causes impaired maternal behavior in mice

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A lack of serotonin, commonly known as the "happiness hormone", in the brain slows the growth of mice after birth and is responsible for impaired maternal behavior later in life. This was the result of research conducted by Dr. Natalia Alenina, Dana Kikic, and Professor Michael Bader of the Max Delbrück Center for Molecular Medicine (MDC) Berlin-Buch, Germany.

At the same time, the researchers discovered that the presence of serotonin in the brain is not crucial for the survival of the animals. Furthermore, they were able to confirm that there are two strictly separate pathways of serotonin production: One gene is responsible for the formation of serotonin in the brain, another gene for the production of the hormone in the body (*PNAS*, June 23, 2009, Vol. 106, No. 25, pp 10332-10337).

The researchers "switched off" the gene Tph2 in mice to elucidate the function of the gene in the brain. Tph2 produces the enzyme tryptophan hydroxylase (TPH), which is responsible for the formation of serotonin.

After the researchers switched off Tph2, the animals produced almost no serotonin in the brain. Nevertheless, the animals were viable and half of them survived until adulthood. However, they needed more sleep during the day and the regulation of their respiration, body temperature, and blood pressure was altered.

The female mice were able to give birth and produced enough milk to feed their pups, but their impaired maternal behavior led to poor survival of the offspring.

The Tph2 gene was discovered by MDC researchers several years ago together with researchers of the Free University (FU) Berlin and Humboldt University Berlin (HUB).

Source: Helmholtz Association of German Research Centres (news : web)