Chemical in antibacterial soap fed to nursing rats harms offspring

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A mother's exposure to triclocarban, a common antibacterial chemical, while nursing her babies shortens the life of her female offspring, a new study in rats finds. The results were presented Monday at The Endocrine Society's 95th Annual Meeting in San Francisco.

Commonly used in antibacterial soap and other personal care products, triclocarban has the potential for a large portion of the public to be exposed to it, said the study's lead author, Rebekah Kennedy, a graduate student in the Department of Public Health at the University of Tennessee, Knoxville.

"Our study provides supporting evidence for the potential adverse effects of triclocarban exposure during early life, specifically during the lactation period," Kennedy said. "The results indicate that a mother's long-term use of this compound might affect the early development of her offspring, at least according to our animal model."

Past studies by the senior investigator, Jiangang Chen, PhD, an assistant professor at the University of Tennessee, showed that triclocarban enhances the growth of sex organs in the adult male rat. In this study, the researchers sought to learn if exposure to the same compound, either in the womb or during lactation, would affect rat pups.

Beginning on pregnancy day 5 and continuing until 21 days after giving birth, maternal rats continuously had free access to regular rat chow (the control rats) or chow supplemented with either 0.2 or 0.5 percent

triclocarban. The doses found in the blood of maternal rats exposed to triclocarban correspond to blood levels of triclocarban in humans after a 15-minute whole-body shower using a bar soap containing 0.6 percent triclocarban, Chen said.

After birth, some littermates were moved to other groups so that each rat mother nursed two of her own pups and two pups from each of the other two groups. The offspring were weighed daily.

Body weight did not differ at birth among rat pups from the three groups, but by day 3, pups nursed by control rats were heavier than either triclocarban-exposed group, Kennedy reported. Pups nursed by rats that received 0.2 percent triclocarban were about half as heavy at weaning on day 21 as pups nursed by controls, and only 4 of 30 pups survived.

The investigators found that all pups nursed by the control rats survived until weaning, including those born to triclocarban-fed maternal rats but nursed by control rats. No pups nursed by rats that received the larger triclocarban dose, 0.5 percent, survived until day 6. Among pups nursed by rats that received the 0.2 percent dose of triclocarban, 57 percent reportedly lived to nine days after birth, and only 13% survived after weaning.

"Our data suggest that the critical exposure window affecting rat pup survival is related to lactation, as all pups raised by control rats survived regardless of triclocarban exposure status during gestation," Kennedy said.

Although the researchers did not measure triclocarban levels in the offspring, they speculate that the chemical entered the gastrointestinal tract through the mother's milk and affected the pups' growth and development.

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