Chemical in antibacterial soap may disrupt mix of organisms in digestive tract

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Use of a common nonprescription antimicrobial, triclocarban (TCC), during pregnancy and breast-feeding may alter the offspring's composition of intestinal bacteria and other micro-organisms, called the gut microbiota, a new animal study finds. Presentation of the results will take place Friday at the Endocrine Society's 98th annual meeting in Boston.

The gut microbiota contains both beneficial and harmful microbes, and changes in its normal composition are linked to diseases including obesity, diabetes, irritable bowel disease, colon cancer, multiple sclerosis and asthma.

TCC is frequently added to antibacterial bar soap. Many antibacterial personal care products are commonly used during pregnancy and by nursing women to protect against infectious disease, said the study's lead author, Rebekah Kennedy, a graduate student in Comparative and Experimental Medicine at the University of Tennessee, Knoxville.

"Our research adds to the growing body of scientific literature suggesting unintended health consequences related to nonprescription antimicrobial use and will allow pregnant and nursing mothers to make informed decisions regarding use of these antimicrobial products," she said.

In previous work, Kennedy and her colleagues found that TCC passes through breast milk from rat mothers to their young, an exposure pathway that is relevant to humans. In their new work, the investigators

studied the consequences of TCC exposure early in life on gut microbiota.

The researchers fed female rats chow supplemented with TCC throughout pregnancy and a 16-day nursing period after the rat pups were born. They collected fecal samples from the maternal rats during pregnancy and nursing. From the nursing pups, they collected the contents of the cecum, an area connecting the small and large intestines that typically undergoes sampling in animal models to test the gut microbiota, according to Kennedy.

The investigators then performed DNA sequencing of the gut microbiota from the collected samples. They compared the results with gut microbiota analysis of rats and their pups that were not exposed to TCC.

Compared with unexposed rats, TCC exposure led to a reduced average number of microbial taxa present in each sample among mother rats and pups, the researchers found.

By postnatal day 16, the pups exposed to TCC had a significantly different composition of gut microbiota from that of unexposed pups. Those differences became noticeable starting at day 12, according to the study abstract.

"The ability of TCC antimicrobial exposure to change the composition of the microbial community warrants future investigation to determine the health outcomes resulting from TCC exposure during sensitive windows of prenatal development and early life," Kennedy said.

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