

New Study Links Head Lice Treatments to Abnormal Behavior in Children



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A disturbing new study has linked a common chemical found in head lice treatments to behavioral difficulties in children.

The research, which was published in the journal *Occupational & Environmental Medicine*, found that children who had higher levels of certain pyrethroids — which are synthetic chemicals used in insecticides like head lice treatments and some mosquito repellents — in their system were more likely to display abnormal behaviors at age 6 than those who didn't.

Pyrethroids work by damaging the nerves of insects, killing them in the process, and scientists wanted to see if they had a negative impact on children as well. (Permethrin, an active ingredient in the most popular drugstore lice treatments, is a pyrethroid.) For the study, the researchers measured levels of five pyrethroid metabolites in the urine of women in the early stages of pregnancy and, later, in their 6-year-olds to see if there was a link between being exposed to the chemical in utero and childhood, and behavior that could suggest neurodevelopmental damage.

Nearly 300 women filled out a questionnaire about socioeconomic factors, lifestyle, their child's behavior, and various things their child had been exposed to. Psychologists visited the families at home to do behavioral assessments of the children, and also took urine and dust samples.

Behavior was rated using the Strengths and Difficulties Questionnaire, a validated behavioral screening test for children, with a focus on altruism (how social children are), internalizing disorders (the inability to share problems and ask for help), and externalizing disorders (being defiant and disruptive).

Three of the pyrethroid metabolites showed up most often in the urine of mothers and their children: trans-DCCA, cis-DBCA, and cis-DCCA.

Here's what researchers determined: Mothers with higher levels of cis-DCCA in their urine during pregnancy were more likely to have children with a higher risk of internalizing behaviors. Higher levels of another metabolite, 3-PBA, in the children's urine was linked with a higher risk of externalizing behaviors. Overall, children with the highest levels of metabolites in their urine were three times more likely to have abnormal behavior than those with lower levels. As a result, the researchers concluded that pyrethroids might alter neurochemical signaling in the brain.

The news is understandably disturbing for parents who have treated their children with pyrethroids for lice — and there are a lot of them. The [Centers for Disease Control and Prevention](#) estimates that up to 12 million head lice infestations happen each year among children aged 3 to 11. Lice are parasites that live in human hair, eyelashes, and eyebrows and feed on the blood of their host, and they're not easy pests to get rid of. Hence, the common use of chemical shampoos and treatments for lice infestations — many of which contain pyrethroids.

Before you panic, know this: The study found that there was a *correlation* between pyrethroids and behavioral issues in children — not a causation. That means they determined that children who have behavioral issues also have high levels of certain pyrethroids in their system, but didn't actually find that using pyrethroids causes behavioral problems in children.

"The findings should be considered preliminary and prompt more rigorous studies," Amesh A. Adalja, MD, a board-certified infectious disease physician and affiliated scholar at the Johns Hopkins Center for Health Security, tells Yahoo Beauty.

Shahrouz Ganjian, MD, a board certified pediatrician at Providence Saint John's Health Center in Santa Monica, Calif., tells Yahoo Beauty that he's not shocked by the findings. "In the past 15 years, there's been a lot more research that has found pesticide exposure is linked to ADHD in boys and pediatric cancer," he says. The study that found a link between ADHD and pesticides was published in the journal *Environmental Health*. It found a link between pyrethroid pesticide exposure and ADHD, particularly in the areas of hyperactivity and impulsivity. While girls were affected, the link was stronger in boys. However, this was also a correlational study.

Pyrethroids are among the most common treatments for lice, but other compounds can be used, like alcohol-based treatments and an anti-parasitic drug called ivermectin, Adalja says. However, pyrethroids are "the main recommended treatments for lice," he adds. Ganjian also recommends Sklice lice treatment, which doesn't contain pyrethroids and Licefreee, which he calls "more natural."