



## SAHA attenuates sevoflurane-induced learning and memory impairments in fetal mice

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**ABSTRACT.** Previous studies have found that children with multiple exposures to anesthesia at an early age are at increased risk of learning and memory impairment. Sevoflurane is the most commonly used inhalational anesthetic for general anesthesia in children. Multiple exposures to sevoflurane have been shown to induce neuroinflammation, inhibit neurogenesis, and cause subsequent learning and memory impairments in fetal mice. Histone-tail acetylation has been implicated in memory formation. In this study, we employed suberanilohydroxamic acid (SAHA), an inhibitor of histone deacetylases, to treat sevoflurane-

induced learning and memory impairments. Six-day-old C57BL/6 mice were exposed to sevoflurane for 2 h daily for 3 days. Morris water maze test performed to evaluate learning and memory impairments and the expression of genes related in to synaptic remodeling/plasticity, or regulated by neuronal activity or the cell cycle were detected by real-time PCR. We found that SAHA attenuated sevoflurane-induced learning and memory impairments in fetal mice. Our findings suggest that SAHA may have potential as a therapeutic agent for preventing or treating the neurotoxicity associated with anesthesia.

**Key words:** Suberanilohydroxamic acid; Memory impairment; Sevoflurane