

Newly developed anesthetic for amphibians could aid field researchers

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Veterinary researchers at the University of Illinois have developed a general anesthetic for amphibians that is administered through their skin. The anesthetic jelly could be a low-cost, easy-to-administer form of anesthesia for veterinary work conducted in the field.

Amphibians such as the Cane toads used in the study breathe through simple saclike lungs or by taking in gases and moisture through their skin, a process called cutaneous gas exchange.

"Because frogs and toads breathe through their skin, we're able to paint this on their backs, and it works very well as a general [anesthetic](#)," said Stuart C. Clark-Price, a specialist in anesthesiology and pain management at the U. of I. Veterinary Teaching Hospital. Clark-Price, whose lab funded the project, served as the faculty mentor for [veterinary](#) student Sabrina M. Stone, the lead author on the study.

Stone worked with Clark-Price and veterinarians Jordyn M. Boesch and Mark A. Mitchell during the summer of 2011 conducting the research as part of the Veterinary Scholars Research Training Program, which was financially supported by Merial, an animal health company.

The researchers applied the anesthetic jelly to the backs of eight Cane toads and placed each toad in a custom-built airtight enclosure, then monitored the concentration of the vaporized anesthetic within the chamber using a gas analyzer. At 30-second intervals, researchers used gloves built into the chamber to turn each toad on its back until the toad

became immobilized and lost its righting reflex.

The initial trial, in which the researchers used a dosage recommended in a previous study that involved African clawed [frogs](#), was unsuccessful. Only six of the eight toads lost their righting reflex, and the others showed signs of arousal or movement when handled, indicating that they were not sufficiently anesthetized.

During the second trial, the researchers increased the sevoflurane dose by 50 percent.

All of the toads became nonresponsive to handling and may have tolerated simple procedures such as venipuncture or intubation for administration of inhalation anesthesia, Stone said.

When collecting blood or other samples in the field, researchers may anesthetize amphibians by immersing them in water in which anesthetics have been dissolved. However, a topically applied anesthetic could be beneficial in many situations, such as locations where water quality is questionable or potentially harmful to the animal, or when a researcher lacks access to water-quality analysis.

Topical anesthetics would also be advantageous when studying terrestrial species such as Cane [toads](#) that might become stressed if immersed.

A study about the team's work appeared recently in the *American Journal of Veterinary Research*.

Provided by University of Illinois at Urbana-Champaign

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