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A Patch for Patches: Transdermal Drugs for Pets

Veterinary Extension/Office of Public Engagement
University of Illinois College of Veterinary Medicine
217/333-2907

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By Kim Marie Labak

In human medicine, the use of transdermal patches for drug delivery is all the rage for people who want to quit smoking, relieve pain, or replace the hormones of their youth. But what about pets? Can drug patches work for them, too?

Transdermal drugs for animals are similar to those for humans. In fact, some of them, like the pain killer fentanyl, are identical. A drug can be administered through a patch applied to a shaved area of skin; the drug reaches the bloodstream transdermally—literally, “across the skin.”

Not all drugs administered transdermally are available in a patch. Drugs can be compounded by pharmacists into a gel that is applied to the animal’s skin, usually on the underside of the ear flap. The fentanyl patch, which is marketed for use in people, has been widely used in domestic species, including the dog, cat, and horse, for pain management.

Other drugs for pets administered transdermally include the antidepressant amitriptyline (Elavil) to treat behavior problems and lower urinary tract disease, and methimazole to treat feline hyperthyroidism.

According to Dr. Steven Marks, chief of small animal medicine at the University of Illinois Veterinary Teaching Hospital in Urbana, the transdermal route is interesting but may not be a miracle method for delivering drugs. Many factors, such as the type of drug and the condition being treated, determine the appropriateness of transdermal administration of a drug.

Dr. Marks says, “Transdermal patches should be used only when other routes of administration (such as orally or by injection) are not possible or would not be as effective.” Only drugs that can be absorbed through the skin and used by the body will be successful, and absorption may depend on several factors such as location on the body, skin type, and breed.

Drugs given transdermally enter the bloodstream more slowly than they do via other routes and may take 24 hours or longer to start working, so the transdermal route would not work for drugs that are needed immediately. Their sustained release makes transdermals more appropriate for treating chronic, non-life threatening conditions.

Veterinarians need a way to confirm that a drug is working. Many medical conditions do not offer objective measurable endpoints to demonstrate that a drug is working. Feline hyperthyroidism, however, can be monitored by measuring thyroid hormone levels. Since the effectiveness of anti-thyroid drug treatment can be measured, using transdermal therapy for this situation may be more appropriate.

If a transdermal drug’s effectiveness cannot be directly evaluated, it should be used only in cases where the drug is not critical to the animal’s immediate survival.

If a drug can meet all these conditions, transdermal therapy offers several potential benefits. An excellent example of a drug that meets the requirements for an effective transdermal drug is methimazole, the anti-thyroid drug used to treat feline hyperthyroidism. The drug can penetrate the skin, the disease is one that is chronic, and most importantly, the effectiveness of drug therapy can be monitored by measuring blood hormone levels.

Transdermal drug delivery can eliminate the need for daily pills. Dr. Marks says, “If you’re a cat owner and you have to chase your pet to pill it every day, that may change the human-animal bond. Kitty sees you, and instead of greeting you, runs away.”

In most cases, owners of hyperthyroid cats can maintain their cat’s affections if they can put the ointment on its ear once to twice daily instead of force-feeding it pills.

For dogs undergoing surgery, veterinarians can use a fentanyl patch before and after surgery to reduce pain. The patch can reduce the amount of injectable drugs and anesthesia required, and instead of staying in the hospital for recovery and injections, dogs may be able to go home sooner with a fentanyl patch. This way, they can be more comfortable recovering at home.

Dr. Marks mentions that other possible benefits include a reduction in side effects, for example, stomach upset, since transdermal drugs bypass the gastrointestinal system. Some drugs may be more potent if administered transdermally, since they may be processed less by the liver.

Hazards of drug patches include of risk of the patch falling off and getting stuck to or swallowed by another pet or a human in the family, but bandage wraps around the patch can minimize this risk.

Veterinarians continue to explore the future of transdermal drugs for pets. More research is needed to support the effectiveness of different transdermal therapies. For more information about transdermal patches and other unique drug delivery systems, consult your veterinarian.

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Source: Dr. Steven Marks