Desoxycorticosterone Pivalate | DOCP

- (de-sox-eekor-ti-kost-er-ohn pih-vah-late)
- Percorten-V®
- Mineralocorticoid

**Prescriber Highlights**

- Parenteral mineralocorticoid used to treat Addison’s in dogs/cats.
- Relative contraindications: congestive heart failure, severe renal disease, or edema; Caution: pregnancy.
- Addison’s patients must receive glucocorticoid supplementation in periods of high stress/illness.
- May cause irritation at injection site.
- Adjust dosage based upon monitoring parameters.

**Uses/Indications**

DOCP is indicated for the parenteral treatment of adrenocortical insufficiency in dogs. It is also used in an extra-label manner in cats.

**Pharmacology/Actions**

Desoxycorticosterone pivalate (DOCP) is a long-acting mineralocorticoid agent. The site of action of mineralocorticoids is at the renal distal tubule where it increases the absorption of sodium. Mineralocorticoids also enhance potassium and hydrogen ion excretion. To be effective, mineralocorticoids require a functioning kidney.

**Pharmacokinetics**

Little information is available. It is injected IM (or subcutaneously) as a microcrystalline depot for slow dissolution into the circulation. Duration of action after injection is usually 21-30 days.

**Contraindications/Precautions/Warnings**

The drug is labeled as contraindicated in dogs suffering from congestive heart failure, severe renal disease, or edema.

Because some animals may be more (or less) sensitive to the effects of the drug, “cookbook” dosing without ongoing monitoring is inappropriate. Some animals may require additional supplementation with a glucocorticoid agent on an ongoing basis. If glucocorticoid dosages are too
high, polydipsia, polyuria, or polyphagia can occur. All animals with hypoadrenocorticism should receive additional glucocorticoids (2-10 times basal) during periods of stress or acute illness.

Do not administer DOCP IV; acute collapse and shock may result. If given IV, treat immediately for shock with IV fluids and glucocorticoids.

**ADVERSE EFFECTS**

Occasionally, irritation at the site of injection may occur. Post-approval reported adverse effects in dogs include (in decreasing frequency): depression/lethargy, vomiting, anorexia, polydipsia, polyuria, diarrhea, facial/muzzle edema, weakness, urticaria and anaphylaxis. Anemia has been reported following DOCP administration.

**REPRODUCTIVE/NURSING SAFETY**

The manufacturer states that the drug should not be used in pregnant dogs as safe use during pregnancy has not been established. Use in pregnant animals only when the potential benefits outweigh the risks.

DOCP should be safe for offspring when administered to nursing dams.

**OVERDOSE/Acute Toxicity**

Overdosage may cause polyuria, polydipsia, hypernatremia, hypertension, edema, and hypokalemia. Cardiac enlargement is possible with prolonged overdoses. Excessive weight gain may be indicative of fluid retention secondary to sodium retention. Electrolytes should be aggressively monitored and potassium may need to be supplemented. Discontinue the drug in patients until clinical signs associated with overdosage have resolved and then restart the drug at a lower dosage.

**DRUG INTERACTIONS**

The following drug interactions have either been reported or are theoretical in humans or animals receiving DOCP and may be of significance in veterinary patients. Unless otherwise noted, use together is not necessarily contraindicated, but weigh the potential risks and perform additional monitoring when appropriate.

- **Amphotericin B**: Patients may develop hypokalemia if mineralocorticoids are administered concomitantly with amphotericin B.
- **Aspirin**: DOCP may reduce salicylate levels.
- **Digoxin**: Because DOCP may cause hypokalemia it should be used with caution and increased monitoring in patients receiving digitalis glycosides.

- **Insulin**: Potentially, DOCP could increase the insulin requirements of diabetic patients.

- **Potassium-Depleting Diuretics** (*e.g.*, furosemide, thiazides): Patients may develop hypokalemia if mineralocorticoids are administered concomitantly with potassium-depleting diuretics; as diuretics can cause a loss of sodium, they may counteract the effects DOCP.

**Doses**

**Dogs:**

- **For maintenance of hypoadrenocorticism** (labeled dose; FDA-approved): Dosage requirements are variable and must be individualized on the basis of the response of the patient to therapy. Begin treatment at a dose of 2.2 mg/kg IM (Note: *Some administer the drug SC in an extra-label manner—Plumb*) every 25 days. In some patients the dose may be reduced. Serum sodium and potassium levels should be monitored. Most patients are well controlled with a dose range of 1.65 – 2.2 mg/kg every 21-30 days. Well-controlled patients have normal electrolytes at 14 days after administration or may exhibit slight hyponatremia and hyperkalemia. This needs no additional therapy as long as the patient is active and eating normally. Monitor for depression, lethargy, vomiting or diarrhea, which indicate a probable glucocorticoid deficiency. At the end of the 25-day dosing interval, the patient should be clinically normal and have normal serum electrolytes; may have slight hyponatremia and slight hyperkalemia. This indicates that the dosage and dosage interval should not be altered. If the dog is not clinically normal or serum electrolytes are abnormal, then the dosage interval should be decreased 2-3 days.

**Note**: DOCP replaces the mineralocorticoid hormones only. Glucocorticoid replacement must be supplied by small daily doses of glucocorticoid hormones (*e.g.*, prednisone or prednisolone) (0.2 – 0.4 mg/kg/day). Failure to administer glucocorticoids is the most common reason for treatment failure. Signs of glucocorticoid deficiency include depression, lethargy, vomiting and diarrhea. Such signs should be treated with high doses of injectable glucocorticoids (prednisolone or dexamethasone), followed by continued oral therapy 0.2 – 0.4 mg/kg/day. Polyuria and polydipsia (PU/PD) usually indicate excess glucocorticoid, but may also indicate DOCP excess. Begin by decreasing the glucocorticoid dose first. If the PU/PD persists, then decrease the dose without changing the interval between doses. Oral supplementation with salt (NaCl) is not necessary with animals receiving DOCP.

(Adapted from label; Percorten®-V)

**Cats:**
• **For maintenance therapy of hypoadrenocorticism** (all are extra-label):
  a. 2.2 mg/kg IM every 25 days plus prednisolone (0.25 – 1 mg/cat PO twice daily; if daily oral dosing not feasible, may give 10 mg of methylprednisolone acetate once a month IM). (Reusch 2000)
  b. 10 – 12.5 mg (per cat) IM per month. Adjust dose based-upon follow-up serum electrolyte concentrations monitored every 1-2 weeks during initial maintenance period. Normal electrolyte values 2 weeks following injection, suggests adequate dosing, but does not provide information regarding duration of action. Prednisone at 1.25 mg PO once a day or IM methylprednisolone acetate 10 mg once a month can provide long-term glucocorticoid supplementation. (Bruyette 2002)

**MONITORING**

- Serum electrolytes, BUN, creatinine; initially every 1-2 weeks, then once stabilized, every 3-4 months. See Dosage above.
- Weight, PE for edema.

**CLIENT INFORMATION**

- Most commonly injected into the muscle (IM) every 20-30 days; sometimes veterinarians will have you inject it under the skin (subcutaneously). Your veterinarian will adjust the dose and times between doses depending on your animal’s response.
- Shake vial vigorously before drawing up into syringe.
- Must not be given IV (into the vein).
- Watch for symptoms of the dose being too high: greater thirst and need to urinate, swelling/edema, weight gain, pot belly; or the dose being too low: muscle weakness, lethargy (lack of energy), shaking, collapsing/fainting, loss of appetite/weight loss, vomiting, diarrhea, slower heartbeat, or painful abdomen. If any of these are seen, contact veterinarian right away.

**CHEMISTRY/SYNONYMS**

A mineralocorticoid, desoxycorticosterone pivalate (DOCP) occurs as a white or creamy white powder that is odorless and stable in air. It is practically insoluble in water, slightly soluble in alcohol and vegetable oils. The injectable product is a white aqueous suspension and has a pH between 5-8.5. The commercially available injection (*Percorten-V®*) contains (per mL): 25 mg desoxycorticosterone pivalate, 10.5 mg methylcellulose, 3 mg sodium carboxymethylcellulose, 1 mg polysorbate 80, and 8 mg sodium chloride with 0.002% thimerosal added as preservative in water for injection.
Desoxycorticosterone pivalate may also be known as: deoxycorticosterone pivalate, deoxycorticosterone trimethyl-acetate, deoxycortone pivalate, deoxycortone trimethylacetate, desoxycorticosterone pivalate, desoxycorticosterone trimethyl-acetate, Cortiron®, or Percorten-V®.

**Storage/Stability**

Store the injectable suspension at room temperature and protect from light or freezing. The label states that once the vial is broached, product should be used within 4 months.

**Compatibility/Compounding Considerations**

Do not mix with any other agent.

**Dosage Forms/Regulatory Status**

**Veterinary-Labeled Products:**

Desoxycorticosterone Pivalate Injectable Suspension: 25 mg/mL in 4 mL vials; *Percorten-V®*; (Rx). FDA-approved for use in dogs; NADA # 141-029. A link to the label information for *Percorten-V®* can be found at dailymed.nlm.nih.gov

The ARCI (Racing Commissioners International) has designated this drug as a class 4 substance. See the [appendix](#) for more information.

**Human-Labeled Products: None.**