**Vitamin D (1,25-dihydroxycholecalciferol (active vitamin D3), cholecalciferol (vitamin D3))**

**(Alfacalcidol*, Calcijex*, Calcitriol*, One-alpha*, Rocaltrol*) POM-VPS, POM**

- **Client Information Leaflet:** Vitamin D
- **Formulations**

Oral: 2 µg (micrograms)/ml solution (Alfacalcidol, One-alpha), 0.25–1 µg capsules (Alfacalcidol, One-alpha), 0.25 µg capsules (Calcitriol, Rocaltrol). Injectable: 1 µg/ml solution (Calcitriol, Calcijex). Vitamin D is a general term used to describe a range of hormones that influence calcium and phosphorus metabolism, including vitamin D2 (ergocalciferol or calciferol), vitamin D3 (cholecalciferol), dihydrotachysterol, alfacalcidol and calcitriol (1,25-dihydroxycholecalciferol, the active form of vitamin D3). These different drugs have differing rates of onset and durations of action.

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- **Action**

In conjunction with other hormones (calcitonin and parathyroid hormone), regulates calcium homeostasis through numerous complex mechanisms, including accretion of calcium to bone stores and absorption of calcium from dietary sources.

- **Use**
    - Chronic management of hypocalcaemia when associated with low parathyroid hormone concentrations which are most commonly associated with immune-mediated hypoparathyroidism and iatrogenic hypoparathyroidism following thyroidectomy.
    - Calcitriol has also been used in the management of renal secondary hyperparathyroidism; in this circumstance it reduces serum parathyroid hormone concentrations.

Calcitriol and alfacalcidol (1-alpha-hydroxycholecalciferol) have a rapid onset of action (1–2 days) and a short half-life (<1 day); they are the preferred forms for use. Vitamin D2 (ergocalciferol) has a very slow onset of action and has limited use in dogs and cats. Vitamin D requires two hydroxylations (one in the liver and the other in the kidney) to become active. Thus, only the active form (calcitriol) should be used in patients with renal failure. Vitamin D has a very narrow therapeutic index and toxic doses are easily achieved. Serum calcium and preferably ionized calcium concentrations need to be monitored closely and frequently. Avoid using formulations of vitamins A, D3 and E that are authorized for farm animals as they are too concentrated for small animal use.

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- **DOSES**
    - **Dogs**
        - Hypocalcaemia/vitamin D deficiency: calcitriol: 10–15 ng (nanograms)/kg p.o. q12h for 3–4 days then decrease to 2.5–7.5 ng/kg p.o. q12h for maintenance; alfacalcidol: 0.01–0.03 µg (micrograms)/kg p.o. q24h and thereafter titrated to effect.

- Renal secondary hyperparathyroidism: calcitriol: 1.5–3.5 ng/kg p.o. q24h; some authors recommend higher doses of up to 6 ng/kg/day if there is refractory hyperparathyroidism and ionized serum calcium concentrations can be assessed. Assess serum calcium and phosphate levels serially and maintain total calcium × phosphate product below 4.2 (calcium and phosphate in mmol/l); do not use if this is not possible.

- **Cats**
  - Hypocalcaemia: calcitriol: 10–15 ng (nanograms)/kg/day p.o. q12h for 3–4 days, then decrease to 2.5–7.5 ng/kg p.o. q12h for maintenance; alfacalcidol: 0.01–0.03 µg (micrograms)/kg p.o. q24h and thereafter titrated to effect.
  - Renal secondary hyperparathyroidism: calcitriol 2.5–3.5 ng/kg/day p.o.