



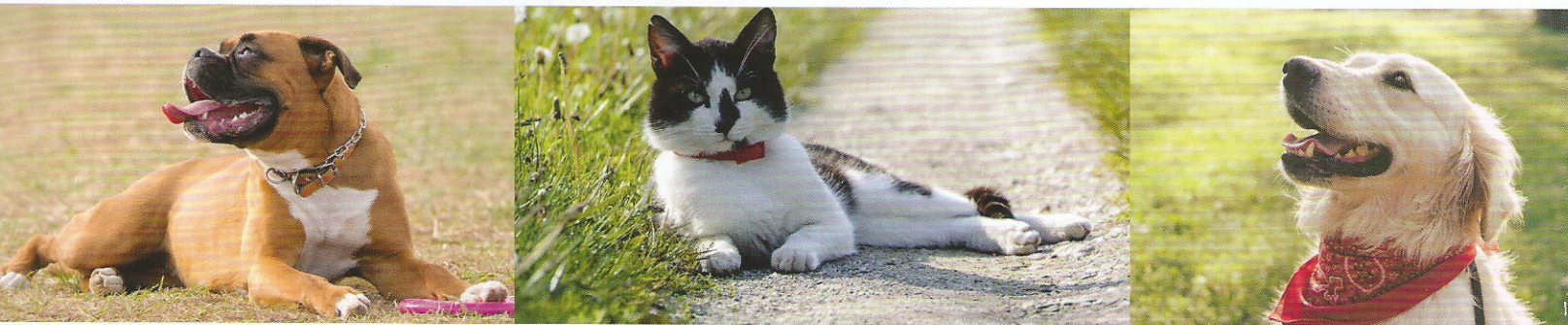
Pro-Enzorb

For Dogs and Cats

Supporting
exocrine
pancreatic
function


Protexin[®]
veterinary

Pro-Enzorb



Pancreatin

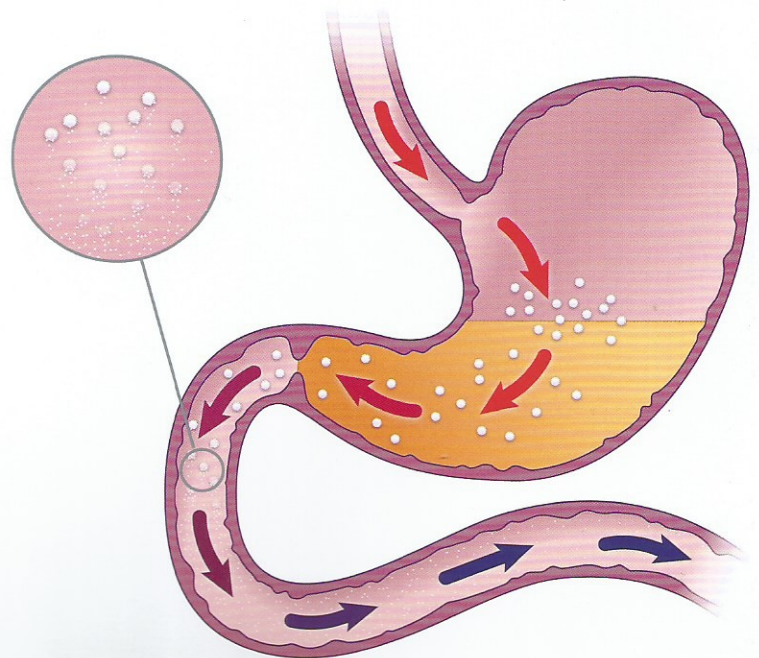
Pancreatic enzymes are very sensitive to changes in the pH and can be destroyed in the acidic environment of the stomach². Not only will uncoated enzyme preparations be destroyed in the stomach, they can also cause erosions of oral mucous membranes and skin irritation.

 Studies have shown that enteric-coated enzyme preparations are more effective than uncoated preparations in the management of EPI³.

Pro-Enzorb contains a highly active blend of three pancreatic enzymes – Lipase, Amylase and Protease. Purified and concentrated porcine pancreatic enzymes are made into micropellets which are then enterically coated.

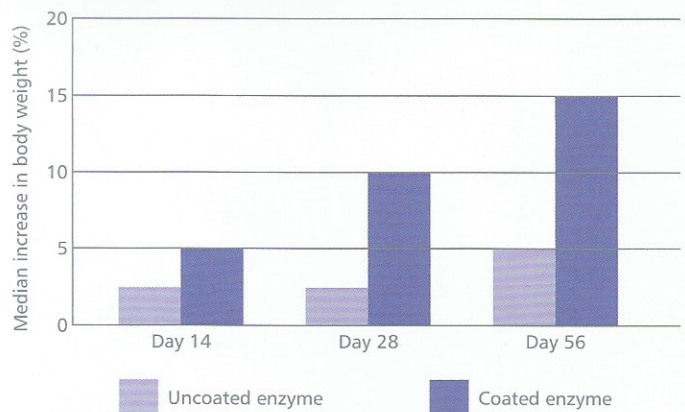
This enteric-coating provides complete protection of the enzymes from the low pH of the stomach allowing them to reach the small intestine, where their digestive action is required.

Once in the alkaline environment of the duodenum, the enteric-coating is broken down, releasing the pancreatic enzymes which act to digest fats, carbohydrates and proteins.



The coated micro-pellets in Pro-Enzorb are not broken down in the stomach, allowing them to reach the duodenum where the digestive enzymes are released to aid food digestion.

Graph comparing the efficacy of coated and uncoated enzymes in dogs³





Probiotics

Intestinal bacterial dysbiosis is common in animals with EPI, not only before enzyme replacement treatment has been started but during treatment as well⁴.

Intestinal dysbiosis occurs due to:

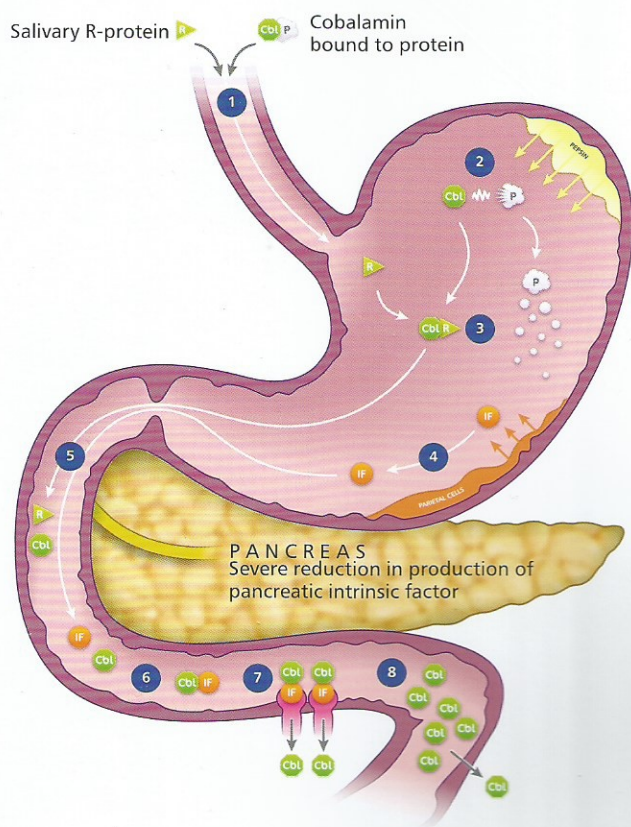
- An increased presence of undigested food in the intestinal lumen
- A lack of bacteriostatic factors in the pancreatic juice
- Changes to intestinal motility and immune functions

The supplementation of pancreatic enzymes does not affect the occurrence of intestinal dysbiosis and oral antibiotic therapy is often required to control the intestinal microbiota⁵. Probiotics aim to regulate the intestinal microbiota and reduce the level of bacterial dysbiosis.



70% of dogs with newly diagnosed EPI have evidence of a microbiota dysbiosis⁶.

Supporting exocrine pancreatic function



Cyanocobalamin

Cyanocobalamin (Vitamin B12) in the diet combines with gastric or pancreatic intrinsic factor to aid absorption into the bloodstream from the intestinal tract. 82% of dogs with EPI are hypocobalaminemic due to a deficiency in production of pancreatic intrinsic factor by acinar cells⁷.



Low serum cobalamin levels are associated with shorter survival times in EPI cases⁸.

Veterinarians are advised to supplement parentally in all cases presenting with hypocobalaminemia^{9,10}. Pro-Enzorb contains high levels of cyanocobalamin to support the maintenance of normocobalamin serum levels. Despite a lack of pancreatic intrinsic factor, dogs with EPI are able to complex oral cyanocobalamin with gastric intrinsic factor. Also hyper-supplementation aids an intrinsic factor independent absorption mechanism⁷.

High dose oral cobalamin supplementation has been shown to normalise serum levels in hypocobalaminemic dogs¹¹.



Cyanocobalamin is a water soluble vitamin; any excess beyond the body requirement is excreted via the urine.

- 1 Ingestion of cobalamin bound to protein and production of salivary R-protein.
- 2 Gastric pepsin breaks cobalamin-protein bond, allowing digestion of protein and release of cobalamin.
- 3 Cobalamin binds to R-protein.
- 4 Gastric intrinsic factor released by parietal cells.
- 5 R-protein-cobalamin complex is broken down by protease enzymes present in Pro-Enzorb.
- 6 Cobalamin binds to gastric intrinsic factor. No pancreatic intrinsic factor present due to insufficiency of the exocrine pancreas.
- 7 Uptake of cobalamin via the cobalamin-intrinsic factor receptors in the ileum.
- 8 When intra-luminal levels of cobalamin are very high, cobalamin can be absorbed by separate pathways independent of the intrinsic factor receptors.