



## TRH-INDUCED SECRETION OF ACTH AND CORTISOL IN DOGS WITH PITUITARY-DEPENDENT HYPERCORTISOLISM

### Introduction

In dogs, spontaneous Cushing's syndrome is most often pituitary-dependent and caused by hypersecretion of adrenocorticotrophic hormone (ACTH), resulting in increased adrenocortical glucocorticoid secretion. In older horses Cushing's syndrome (or Pituitary Pars Intermedia Dysfunction) a thyrotropin-releasing hormone (TRH) stimulation test can be used for diagnosis, as TRH administration results in increased circulating ACTH and cortisol concentrations in these horses.

### Hypothesis

TRH administration increases the circulating ACTH and cortisol concentrations in dogs with pituitary-dependent hypercortisolism (PDH).

### Materials and methods

Ten healthy control dogs and 10 dogs with PDH were included in this study. All dogs underwent a TRH stimulation test with measurement of plasma concentrations of ACTH and cortisol, before and after intravenous administration of 10 µg TRH/kg bodyweight.

### Results

The plasma ACTH concentration did not rise significantly after TRH stimulation, neither in PDH dogs nor in healthy dogs. In contrast, the plasma cortisol concentration did increase significantly after TRH stimulation in both groups. Immunohistochemistry of normal adrenal glands demonstrated the presence of TRH receptors in the whole adrenal cortex, being most prominent in the zona fasciculata and zona reticularis.

### Conclusions and clinical importance

The results demonstrate that the TRH stimulation test should be rejected as tool to diagnose PDH in dogs. The observed TRH-induced increase in plasma cortisol concentration without a significant rise in plasma ACTH concentration may be explained by a direct effect of TRH on adrenocortical cells mediated by adrenocortical TRH receptors.

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