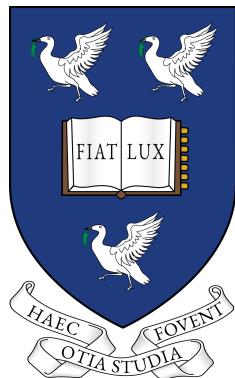


Standard operating procedure (EPA)

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Equine Protein Atlas

Pituitary Gland

Background

The pituitary gland in horses is a critical endocrine organ located at the base of the brain, controlling hormonal regulation and influencing growth, metabolism, and reproduction. While the pituitary gland itself is distant from the submandibular region, its hormonal output can have downstream effects on this area, particularly through its regulation of metabolism and immune function. Ageing significantly impacts the pituitary gland, most notably through the development of pituitary pars intermedia dysfunction (PPID), also known as equine Cushing's disease. This condition is common in older horses and leads to excessive production of hormones such as adrenocorticotropic hormone (ACTH), which can alter immune function and wound healing. These changes may affect the submandibular region indirectly, increasing susceptibility to infections or delayed recovery in this area. Additionally, ageing-related endocrine imbalances can contribute to systemic inflammation and metabolic dysregulation, further impacting tissue health in regions like the submandibular area.

Equipment needed

1. Scalpel
2. Tweezers
3. Liquid Nitrogen
4. 10% Formalin
5. Band saw

Methods

1. Collect age and sex-matched equine heads from abattoir
2. If this is not possible use equine dentition to determine age and sex
3. Sample of blood can also be collected to aid in sex-determination
4. Cut head with bandsaw at the midpoint between the 04s and 05s
5. Cut the head sagitally at the mid point into two halves
6. Locate the pituitary gland, see photo below
7. Remove gland from left side of head for proteomics analysis
8. Snap freeze in liquid nitrogen
9. Store at -80°C
10. Remove pituitary gland from the right hand side of head for histological processing
11. Store in 10% Formalin

