# Alpha Subunits

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| **Description** | The common alpha subunit of glycoprotein hormones |
| **Indication** | Thyrotoxicosis with elevated T4 and/or T3 and inappropriately detectable or elevated TSH following exclusion of laboratory artefacts and binding protein abnormalities, to distinguish central autonomous TSH excess (TSHoma) from thyroid hormone resistance. |
| **Additional Info** | The glycoprotein hormones of the pituitary (TSH, LH and FSH) and placenta (hCG) are dimeric and share similar, interchangeable alpha subunits. It is the beta subunit of each glycoprotein which is unique and therefore determines its specific function. Isolated beta subunits may have slight intrinsic biological activity, but isolated alpha subunits are devoid of function; full activity is attained when alpha and beta subunits are recombined.<br><br>The finding of an elevated SHBG and circulating free alpha subunit may support the diagnosis of TSHoma, as may the finding of hyper-or hypo-secretion of other pituitary hormones. Pituitary imaging usually confirms the diagnosis, but should not be undertaken until the appropriate biochemical confirmation has been made. A syndrome of thyroid hormone resistance can be confirmed by family history; sequencing of the beta thyroid hormone receptor confirms the diagnosis. *[UK guidelines for the use of thyroid function tests, 2006]* |
| **Concurrent Tests** | SHBG<br>Anterior pituitary hormone profile |
| **Dietary Requirements** | N/A |
| **Interpretation** | Most TSH producing pituitary adenomas show an increase in alpha subunit, whereas levels generally remain normal in thyroid hormone resistance. Values are also high in postmenopausal women, in men with hypogonadism and in gonadotrophin-producing pituitary tumours, because both thyrotrophs and gonadotrophs secrete this subunit. |
| **Collection Conditions** | Clinical details and results of other pituitary hormone tests required. |
| **Frequency of testing** | Repeated measurement inappropriate. |