Steroid

Type of organic compound that contains a characteristic arrangement of four cycloalkane rings joined to one another.

The steroid core is composed of seventeen carbon atoms bonded together in the form of four fused rings: three cyclohexane rings (designated as rings A, B and C in the figure to the right) and one cyclopentane ring (the D ring). Individual steroids vary, first and primarily, by the oxidation state of the carbon atoms in the rings and by the chains and functional groups attached to this four-ring system; second, steroids can vary more markedly via changes to the ring structure (e.g., via ring scissions that produce secosteroids like vitamin D3, see below). Sterols are a particularly important form of steroids, with sterols having a cholestane-derived framework and an hydroxyl group at the C-3 ring position being the most prominent (e.g., as in cholesterol, shown at right).

Hundreds of distinct steroids are found in animals, fungi, plants, and elsewhere. All natural steroids are made in living cells, either from the sterol lanosterol (animals and fungi, see examples) or from cycloartenol (plants). Both lanosterol and cycloartenol are derived via cyclization of the triterpenoid squalene.

Classification

A steroid hormone (abbreviated as sterone) is a steroid that acts as a hormone. Steroid hormones can be grouped into five groups by the receptors to which they bind:

Glucocorticoids.

Dexamethasone.

Mineralocorticoids, androgens, estrogens, and progestogens. Vitamin D derivatives are a sixth closely related hormone system with homologous receptors. They have some of the characteristics of true steroids as receptor ligands, but lack the planar fused four ring system of true steroids.

see 21-aminosteroid.

Indications

Steroid Indications.

Side effects

Steroids may have central nervous system side effects affecting whole body, including steroid-induced mental agitation and psychosis.

In the absence of a meta-analysis, most weight should be placed on the result of the largest trial. The increase in mortality with steroids in this trial suggest that steroids should no longer be routinely used

in people with traumatic head injury [1].

Complications

Complications of steroid therapy occur in ≈ 50% of patients. Most are not life threatening, and include vertebral compression fractures in ≈ 36%, peptic ulcer disease in ≈ 12%, proximal myopathy, cataracts, exacerbation of diabetes; also see Possible deleterious side effects of steroids.

30–50% of patients will have spontaneous exacerbations of GCA (especially during the first 2 years) regardless of the corticosteroid regimen.

Survival parallels that of the general population. Onset of blindness after initiation of steroid therapy is rare.

1)
Alderson P, Roberts I. Corticosteroids for acute traumatic brain injury. Cochrane Database Syst Rev. 2005 Jan 25;(1):CD000196. Review. PubMed PMID: 15674869.