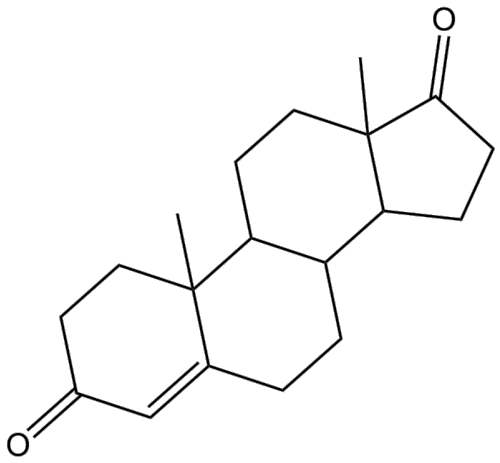
Product Data Sheet

Product Name: Androstenedione
Cat. No.: GC19559

Chemical Properties

Cas. No.	63-05-8		
Chemical Name	(8R,9S,10R,13S,14S)-10,13-dimethyl-2,6,7,8,9,11,12,14,15,16-decahydro-1H-cyclope		
SMILES	CC12CCC(=O)C=C1CCC3C2CCC4(C3CCC4=O)C		
Formula	$C_{19}H_{26}O_2$	M.Wt	286.41
Solubility	DMF: 25 mg/ml,DMSO: 15 mg/ml,DMSO:PBS (pH 7.2) (1:1): 0.5 mg/ml,Ethanol: 10 mg/ml	Storage	Store at RT, protect from light
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Protocol

Animal experiment [1]:

Product Data Sheet

Animal models	CD-CRL:BR/VAF rats
Preparation Method	The pregnant females CD-CRL:BR/VAF rats were dosed by gavage with 0, 5, 30 or 60 mg/kg/day androstenedione in corn oil beginning two weeks prior to mating and continuing through to gestation day 19. Dams were euthanized on gestation day 20.
Dosage form	0, 5, 30 or 60mg/kg/day; p.o.
Applications	High doses of Androstenedione induce a significant increase in the formation of 6α-, 15β-, 7α-, 16β-, and 2β-hydroxytestosterone in liver cells of pregnant and non-pregnant rats.

References:

[1] Flynn T J, Sapienza P P, Wiesenfeld P W, et al. Effects of oral androstenedione on steroid metabolism in liver of pregnant and non-pregnant female rats[J]. Food and chemical toxicology, 2005, 43(4): 537-542.

Background

Androstenedione is an endogenous weak androgenic steroid hormone produced in the adrenal glands and gonads and is an intermediate in the biosynthesis of estrone and testosterone[1]. Androstenedione is a common precursor of both androgenic and estrogenic sex hormones[2]. Androstenedione can be biosynthesized in one of two ways. The primary pathway involves the conversion of 17α-hydroxypregnenolone to dehydroepiandrosterone (DHEA) by 17,20-lyase, followed by the conversion of DHEA to androstenedione by 3β-hydroxysteroid dehydrogenase. The secondary pathway involves the direct conversion of 17α-hydroxyprogesterone (usually a precursor of cortisol) to androstenedione by 17,20-lyase[3]. Androstenedione is manufactured as a dietary supplement and is believed to increase testosterone levels, enhance athletic performance, build body muscle,

reduce fat, increase energy, maintain healthy red blood cells, and improve sexual performance[4]. Serum androstenedione levels greater than or equal to 200 ng/dL may indicate the presence of adrenal or gonadal tumors[5].

In vivo, oral administration of androstenedione (60 mg/kg/day) to pregnant and non-pregnant female rats induced a significant increase in the formation of 6α-, 15β-, 7α-, 16β-, and 2β-hydroxytestosterone in the liver cells of pregnant and non-pregnant rats[6]. Androstenedione (1.5-100 mg/kg) administered as a 21-day sustained-release granule to ovariectomized rats reduced cancellous bone volume loss in a dose-dependent manner by reducing bone turnover[7].

References:
[1] Elzenaty R N, Du Toit T, Flück C E. Basics of androgen synthesis and action[J]. Best Practice & Research Clinical Endocrinology & Metabolism, 2022, 36(4): 101665.
[2] Tang J, Chen L R, Chen K H. The utilization of dehydroepiandrosterone as a sexual hormone precursor in premenopausal and postmenopausal women: an overview[J]. Pharmaceuticals, 2021, 15(1): 46.
[3] Miller W L. Androgen synthesis in adrenarche[J]. Reviews in Endocrine and Metabolic Disorders, 2009, 10(1): 3-17.
[4] Badawy M T, Sobeh M, Xiao J, et al. Androstenedione (a natural steroid and a drug supplement): a comprehensive review of its consumption, metabolism, health effects, and toxicity with sex differences[J]. Molecules, 2021, 26(20): 6210.
[5] Yesiladali M, Yazici M G K, Attar E, et al. Differentiating polycystic ovary syndrome from adrenal disorders[J]. Diagnostics, 2022, 12(9): 2045.
[6] Flynn T J, Sapienza P P, Wiesenfeld P W, et al. Effects of oral androstenedione on steroid metabolism in liver of pregnant and non-pregnant female rats[J]. Food and chemical toxicology, 2005, 43(4): 537-542.
[7] Lea C K, Moxham V, Reed M J, et al. Androstenedione treatment reduces loss of cancellous bone volume in ovariectomised rats in a dose-responsive manner and the effect is not mediated by oestrogen[J]. Journal of endocrinology, 1998, 156(2): 331-340.