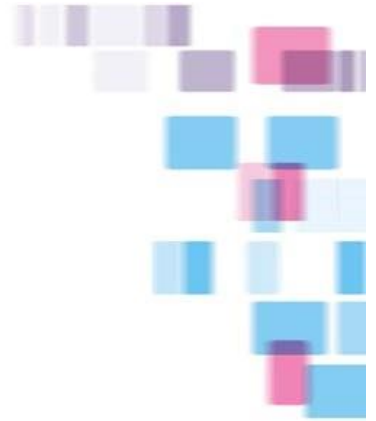


Fact Sheet: Dihydrotestosterone



Testing indications

Dihydrotestosterone (DHT) is used for the assessment of disorders of sexual development. It is also useful for the diagnosis of 5-alpha reductase deficiency, a rare genetic disorder.

Clinical information

DHT is produced from testosterone by the enzyme 5-alpha reductase. Circulating DHT is predominantly from peripheral conversion of testosterone, with a minor contribution secreted directly by the testis and adrenal glands. DHT is synthesised in the liver as well as androgen target tissues including skin, axillary and beard hair follicles, and internal/external male genitalia. While synthesis of DHT by the prostate is important for growth and development of the prostate, this does not contribute to circulating DHT. The affinity of DHT for the androgen receptor is greater than that of testosterone, and so it is considered a more potent androgen within the target tissues.

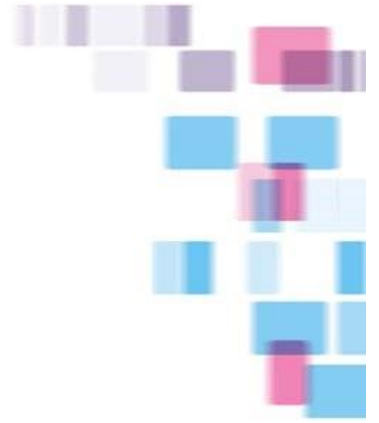
In the male fetus DHT is required for the differentiation of the urogenital sinus and development of the male external genitalia. Males with 5-alpha reductase deficiency typically present with ambiguous external genitalia at birth, with normal Wolffian structures and have virilization at puberty, however there is a wide variation in presentations.

Reference intervals

	Sex	Age	Reference interval		Units
Dihydrotestosterone	Females	0d to <1w	0.2	<0.5	nmol/L
		1w to <30w		<0.2	
		30w to <10y		<0.2	
		10y to <20y		0.6	
		20y to <110y		<0.7	
	Males	0d to <1w (Premature)	0.3	1.8	nmol/L
		0d to <1w (Full term)	0.2	2.1	
		1w to <30w	0.4	2.9	
		30w to <10y		<0.2	
		10y to <20y		<1.8	
20y to <110y	0.4	2.5			

Source: ARUP laboratories' reference interval verified locally on adult subset

Fact Sheet: Dihydrotestosterone



Interpretation of results

Patients with the rare genetic deficiency of 5-alpha reductase have reduced DHT, with high or normal testosterone, resulting in an increased testosterone:DHT ratio.

Circulating DHT concentration is decreased by 5-alpha reductase inhibitors as used in the management of prostate cancer and androgenic alopecia.

Increased DHT is seen with increased testosterone, for example due to testosterone replacement therapy, as a result of peripheral conversion.

Specimen:

Sample type:

Serum gel tube – Preferred

Serum non-gel tube – Accepted

Minimum volume: 0.4mL serum

Method: LC-MS/MS

Testing frequency: twice weekly (Mondays and Thursdays)

References:

Marchetti P and Barth J. Clinical biochemistry of dihydrotestosterone. *Ann Clin Biochem* 2013; 50:94-107

Nishiyama T. Serum testosterone levels after medical or surgical androgen deprivation: A comprehensive review of the literature. *Urologic Oncology: Seminars and Original Investigations* 2014; 38:e17-28

Amory J, Wang C, Swerdloff R et al. The effect of 5alpha-reductase inhibition with dutasteride and finasteride on semen parameters and serum hormones in healthy men. *J Clin Endocrinol Metab.* 2007;92(5):1659-65.

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