

5 α -pregnan-20-ol-3-one

- allopregnan-20 α -ol-3-one
- 20 α -hydroxy-5 α -pregnan-3-one

allopregnandiol

- 5 α -pregnane-3 α ,20 α -diol (isomer 1/4)
- allopregnan-3 α ,20 α -diol (isomer 1/4)
- 3 α ,20 α -dihydroxy-5 α -pregnane (isomer 1/4)
- 5 α -pregnane-3 β ,20 β -diol (isomer 2/4)
- 5 α -pregnane-3 α ,20 β -diol (isomer 3/4)
- 5 α -pregnane-3 β ,20 α -diol (isomer 2/4)

5 α DHP

- allopregnanedione
- 5 α -pregnane-3,20-dione
- 3,20-allopregnanedione
- 3,20-dioxo-5 α -pregnane
- 5 α -dihydroprogesterone

5 α -pregnan-17 α -ol-3,20-dione

- 17 α -hydroxy-5 α -pregnane 3,20-dione
- allopregnane-3,20-dione-17 α -ol

THP (isomer 1/4)

- allopregnanolone
- 3 α -hydroxy-5 α -pregnan-20-one
- (3 α ,5 α)-3-hydroxypregnan-20-one
- 3 α -OH DHP
- 5 α -pregnan-3 α -ol-20-one
- allopregnan-3 α -ol-20-one
- (+)-3 α -hydroxy-5 α -pregnan-20-one
- (3 α)-allopregnanolone
- 3 α -tetrahydroprogesterone
- 3 α ,5 α -tetrahydroprogesterone
- 3 α ,5 α -pregnanolone
- Pregnanolone, (5 α)-isomer
- brexanolone

THP (isomer 2/4)

- pregnanolone
- 3 α -hydroxy-5 β -pregnan-20-one
- 3 α ,5 β -tetrahydroprogesterone
- 3 α ,5 β -THP
- eltanolone
- pregnan-3 α -ol-20-one
- β -pregnan-20-one, 3 α -hydroxy-5

THP (isomer 3/4)

- isopregnanolone
- 3 β -hydroxy-5 α -pregnan-20-one
- 3 β ,5 α -tetrahydroprogesterone
- 3 β ,5 α -THP
- isoallopregnanolone
- epiallopregnanolone
- allopregnan-3 β -ol-20-one
- β -ol-20-one, allopregnan-3
- 3-pregnan-20-one, 3 α -hydroxy-5
- eltanolone
- Pregnanolone, (3 β ,5 α)-isomer

THP (isomer 4/4)

- epipregnanolone
- 3 β -hydroxy-5 β -pregnan-20-one
- 3 β ,5 β -tetrahydroprogesterone
- 3 β ,5 β -THP
- 3 β -hydroxy-5 β -tetrahydroprogesterone
- pregnanolone I
- sepranolone
- β -ol-20-one, allopregnan-3

P

- progesterone
- 4-pregnene-3,20-dione
- pregn-4-en-3,20-dione
- agolutin
- akrolutin
- corpus luteum hormone
- crinone
- Δ 4-pregnene-3,20-dione

PANEL I: ALIASES FOR COMPOUND NAMES**17OHP**

- 17 α -hydroxyprogesterone
- 17-hydroxypregn-4-en-3,20-dione
- 17 α -hydroxy-4-pregnene-3,20-dione
- 17 α -hydroxy-progesterone
- Δ 4-pregnene-17 α -ol-3,20-dione
- hydroxyprogesterone
- pregn-4-ene-3,20-dione-17-ol

20 α DHP

- 20 α -dihydroprogesterone
- 20 α -hydroxypreg-4-en-3-one
- 20 α -hydroxydihydroprogesterone
- 20 α -hydroxy-4-pregnen-3-one
- 20 α -progerol
- 20 α -hydroxypregnen-2-one
- progesterol-20 α
- algestone
- alphasone
- pregn-4-en-3-one, 20 α -hydroxy

17OHP5

- 17-hydroxypregnenolone
- 5-Pregnen-3 β ,17 α -diol-20-one
- (3 β)-3,17-dihydroxypreg-5-en-20-one
- 17-OH-pregnenolone
- 17 α -hydroxypregnenolone
- 3 β ,17-dihydroxy-5-pregnen-20-one
- hydroxypregnenolone

P5

- pregnenolone
- 3 β -hydroxy-5-pregnen-20-one
- 3-hydroxypreg-5-en-20-one
- 5-Pregnen-3 β -ol-20-one
- natolone
- Pregn-5-en-3 β -ol-20-one
- pregneton

Androstanedione

- 5 α -androstane-3,17-dione
- 5 α -androstanedione
- androstane-3,17-dione
- 5 α -androstane-3,17-dione
- androstane-3,17-dione, (5 α)-isomer
- 3,17-dioxy-5 α -androstane

AN

- androsterone
- 3 α -hydroxy-5 α -androstan-17-one
- 3 α -hydroxy-17-androstanone
- (3 α ,5 α)-3-hydroxy-androstan-17-one
- 3 α -hydroxyetioallocholan-17-one
- 3-epihydroxyetioallocholan-17-one
- 3-hydroxyandrostan-17-one
- androkinine

3 α DIOL

- androstanediol
- 5 α -androstane-3 α ,17 β -diol
- 3 α -androstanediol
- androstane-3,17-diol
- 5-androstane-3,17-diol

3 β DIOL

- 3 β -androstanediol
- 5 α -androstane-3 β ,17 β -diol

EPI

- epiandrosterone
- 3 β -hydroxy-17-oxo-5 α -androstane
- 3-epiandrosterone
- 3 β -androsterone
- 3 β -hydroxy-3 β -androstan-17-one
- 3 β -hydroxyandrostan-17-one
- 3 β -hydroxyetioallocholan-17-one
- 3 β -OH-5 α -androstane-17-one
- 5 α -androstan-3 β -ol-17-one
- D-epiandrosterone

DHT

- Dihydrotestosterone
- 5 α -androstan-17 β -ol-3-on
- 5 α -dihydrotestosterone
- 17 β -hydroxy-5 α -androstan-3-one
- 17 β -Hydroxy-3-oxo-5 α -androstanone
- androstanolona
- androstanolone
- stanolone

EpiT

- epitestosterone
- 17 α -hydroxy-4-androsten-3-one
- isotestosterone
- 17 α -testosterone
- androst-4-en-17 α -ol-3-one

A5

- androstenediol
- androst-5-ene-3 β ,17 β -diol
- 5-androstenediol
- androst-5-ene-3,17-diol
- Tetrabiol
- (3 β ,17 β)-androst-5-ene-3,17-diol
- Δ 5-androstenediol
- Δ 5-androstene-3 β ,17 β -diol

 Δ 4-A5

- 4-androstenediol
- androst-4-ene-3 β ,17 β -diol
- Δ 4-androstene-3 β ,17 β -diol
- (3 β ,17 β)-androst-4-ene-3,17-diol
- 3 β ,17 β -dihydroxy-4-androstene

DHEA

- Dehydroepiandrosterone
- dehydroisoandrosterone
- (3 β)-3-hydroxyandrost-5-en-17-one
- 17-hormoforin
- 3 β -hydroxy-5-androsten-17-one
- 3 β -Hydroxy- Δ 5-androsten-17-one
- andrestenol
- androstenolone

A4

- androstenedione
- 4-Androstene-3,17-dione
- 3,17-dioxoandrost-4-ene
- Δ 4-androstenedione
- Androst-4-ene-3,17-dione
- 4-androstene-3,17-dione
- Δ 4-dione
- Δ 4-Androsten-3,17-dione
- 17-ketotestosterone

T

- testosterone
- 17 β -hydroxyandrost-4-ene-3-one

E2

- 17 β -estradiol
- (17 β)-estra-1,3,5(10)-triene-3,17-diol
- cis-estradiol
- 13 β -methyl-1,3,5(10)-gonatriene-3,17 β -ol
- 3,17-epidihydroxyestratriene
- 3,17 β -dihydroxyestra-1,3,5(10)-triene
- aerodiol

E1

- estrone
- 3-hydroxy-1,3,5(10)-estratrien-17-one
- follicular hormone
- 1,3,5(10)-estratrien-3-ol-17-one
- 3-hydroxy-17-keto-estra-1,3,5-triene
- 3-hydroxyestra-1,3,5(10)-trien-17-one
- Δ 1,3,5(10)-estratrien-3-ol-17-one

PANEL II: ALIASES FOR ENZYME NAMES (1/2)

StAR

- Steroidogenic Acute Regulatory Protein
- Mitochondrial Steroid Acute Regulatory Protein
- StAR Related Lipid Transfer (START) Domain Containing 1
- Cholesterol Trafficker

CYP11A1

- Cytochrome P450 Family 11 Subfamily A Member 1
- Cytochrome P450, Subfamily XIA (Cholesterol Side Chain Cleavage)
- Cytochrome P450 11A1
- Cytochrome P450 side-chain cleavage enzyme
- Cholesterol 20-22 Desmolase
- Cholesterol Desmolase
- Cholesterol Monooxygenase (Side-Chain-Cleaving)

CYP17A1

- Cytochrome P450c17
- Cytochrome P450 Family 17 Subfamily A Member 1
- Steroid 17- α -Monooxygenase
- Cytochrome P450, Family 17, Subfamily A, Polypeptide 1
- Steroid 17- α -Hydroxylase/17,20 Lyase
- 17- α -Hydroxyprogesterone Aldolase

CYP19A1

- Aromatase
- Cytochrome P450 Family 19 Subfamily A Member 1
- Cytochrome P450, Subfamily XIX
- Cytochrome P-450AROM
- Cytochrome P450 19A1
- Estrogen Synthase
- Microsomal Monooxygenase
- Flavoprotein-Linked Monooxygenase

HSD3B1

- 3 β -Hydroxysteroid Dehydrogenase/ $\Delta^5 \rightarrow 4$ -Isomerase Type I
- Δ^{5-4} -isomerase
- Δ^5 -3 β -HSD
- Hydroxy- Δ^5 -Steroid Dehydrogenase, 3 β - and Steroid Δ -Isomerase 1
- Short Chain Dehydrogenase/Reductase Family 11E, Member 1
- Trophoblast Antigen FDO161G
- 3 β -Hydroxy- Δ^5 -Steroid Dehydrogenase
- 3 β -Hydroxy-5-Ene Steroid Dehydrogenase
- Δ^5 -3-Ketosteroid Isomerase
- Steroid Δ -Isomerase
- Progesterone Reductase

HSD3B2

- 3 β -Hydroxysteroid Dehydrogenase/Delta 5 \rightarrow 4-Isomerase Type II
- Δ^{5-4} -isomerase
- Δ^5 -3 β -HSD
- Hydroxy- Δ^5 -Steroid Dehydrogenase, 3 β - And Steroid Δ -Isomerase 2
- Short Chain Dehydrogenase/Reductase Family 11E, Member 2
- 3 β -HSD Adrenal And Gonadal Type
- β -Hydroxysteroid Dehydrogenase Type II
- 3- β -Hydroxy- Δ^5 -Steroid Dehydrogenase
- 3- β -Hydroxy-5-Ene Steroid Dehydrogenase
- Delta 5- Δ^4 -Isomerase Type II
- Progesterone Reductase

17 β HSD1

- 17 β -hydroxysteroid dehydrogenase type 1
- Short Chain Dehydrogenase/Reductase Family 28CE, Member 1
- Hydroxysteroid 17- β -Dehydrogenase 1
- Placental 17- β -Hydroxysteroid Dehydrogenase
- 20 Alpha-Hydroxysteroid Dehydrogenase
- Estradiol 17- β -Dehydrogenase-1

17 β HSD2

- 17 β -hydroxysteroid dehydrogenase type 2
- Short Chain Dehydrogenase/Reductase Family 9C Member 2
- Hydroxysteroid 17- β -Dehydrogenase 2
- Microsomal 17- β -Hydroxysteroid Dehydrogenase
- 20 Alpha-Hydroxysteroid Dehydrogenase
- Testosterone 17- β -Dehydrogenase

17 β HSD3

- 17 β -hydroxysteroid dehydrogenase type 3
- Short Chain Dehydrogenase/Reductase Family 12C Member 2
- Hydroxysteroid 17- β -Dehydrogenase 3
- Testicular 17- β -Hydroxysteroid Dehydrogenase
- Testosterone 17- β -Dehydrogenase 3

17 β HSD4

- 17 β -hydroxysteroid dehydrogenase type 4
- Short Chain Dehydrogenase/Reductase Family 8C Member 1
- 3-Alpha,7-Alpha,12-Alpha-Trihydroxy-5- β -Cholest-24-Enoyl-CoA Hydratase
- 17 β -Estradiol Dehydrogenase Type IV
- Peroxisomal MultiCatalysal Protein 2
- D-BiCatalysal Protein, Peroxisomal
- D-3-Hydroxyacyl-CoA Dehydratase
- β -Hydroxyacyl Dehydrogenase
- MultiCatalysal Protein 2
- β -Keto-Reductase2

17 β HSD6

- 17 β -hydroxysteroid dehydrogenase type 6
- Short Chain Dehydrogenase/Reductase Family 9C Member 6
- Oxidative 3-Alpha-Hydroxysteroid-Dehydrogenase
- 3(Alpha \rightarrow Beta)-Hydroxysteroid Epimerase
- 3-Hydroxysteroid Epimerase
- Retinol Dehydrogenase
- Oxidoreductase
- NAD⁺-Dependent 3 Alpha-Hydroxysteroid Dehydrogenase
- Oxidative 3-Alpha Hydroxysteroid Dehydrogenase

17 β HSD7

- 17 β -hydroxysteroid dehydrogenase type 7
- Short Chain Dehydrogenase/Reductase Family 37C Member 1
- Estradiol 17-Beta-Dehydrogenase 7
- 3-Keto-Steroid Reductase

17 β HSD8

- 17 β -hydroxysteroid dehydrogenase type 8
- Short Chain Dehydrogenase/Reductase Family 30C Member
- 3-Ketoacyl-[Acyl-Carrier-Protein] Reductase Alpha Subunit
- 3-Oxoacyl-[Acyl-Carrier-Protein] Reductase
- Really Interesting New Gene 2 Protein
- Testosterone 17-Beta-Dehydrogenase 8
- Estradiol 17-Beta-Dehydrogenase 8
- Estrogen 17-Oxidoreductase

17 β HSD9

- 17 β -hydroxysteroid dehydrogenase type 9
- Short Chain Dehydrogenase/Reductase Family 9C Member 5
- Retinol Dehydrogenase 5
- 9-Cis Retinol Dehydrogenase
- 11-Cis Retinol Dehydrogenase

17 β HSD10

- 17 β -hydroxysteroid dehydrogenase type 10
- Endoplasmic Reticulum-Associated Amyloid Beta-Peptide-Binding Protein
- 3-Hydroxy-2-Methylbutyryl-CoA Dehydrogenase
- Mitochondrial Ribonuclease P Protein 2
- AB-Binding Alcohol Dehydrogenase
- Mitochondrial RNase P Subunit 2
- 3-Hydroxyacyl-CoA Dehydrogenase Type II

PANEL II: ALIASES FOR ENZYME NAMES (2/2)

17 β HSD11

- 17 β -hydroxysteroid dehydrogenase type 11
- Short Chain Dehydrogenase/Reductase Family 16C Member 2
- Retinal Short-Chain Dehydrogenase/Reductase 2
- Cutaneous T-Cell Lymphoma-Associated Antigen HD-CL-03
- Dehydrogenase/Reductase SDR Family Member 8
- Estradiol 17-Beta-Dehydrogenase 11

17 β HSD12

- 17 β -hydroxysteroid dehydrogenase type 12
- Short Chain Dehydrogenase/Reductase Family 12C Member 1
- Estradiol 17-Beta-Dehydrogenase 12
- Very-Long-Chain 3-Oxoacyl-CoA Reductase
- Steroid Dehydrogenase Homolog

17 β HSD13

- 17 β -hydroxysteroid dehydrogenase type 13
- Short Chain Dehydrogenase/Reductase Family 16C Member 3
- Short-Chain Dehydrogenase/Reductase 9

17 β HSD14

- 17 β -hydroxysteroid dehydrogenase type 14
- Short Chain Dehydrogenase/Reductase Family 47C Member 1
- Retinal Short-Chain Dehydrogenase/Reductase RetSDR3
- Dehydrogenase/Reductase (SDR Family) Member 10
- Retinal Short-Chain Dehydrogenase/Reductase 3
- 17-Beta-Hydroxysteroid Dehydrogenase DHRS10

17 β HSD15

- Retinol Dehydrogenase 11 (All-Trans/9-Cis/11-Cis)
- Androgen-Regulated Short-Chain Dehydrogenase/Reductase
- Short Chain Dehydrogenase/Reductase Family 7C, Member
- HCV Core-Binding Protein HCBP12
- Retinal Reductase 1 Prostate Short-Chain Dehydrogenase Reductase
- Prostate Short-Chain Dehydrogenase/Reductase
- Retinol Dehydrogenase 11

DHRS11

- Dehydrogenase/Reductase 11
- Short-Chain Dehydrogenase/Reductase Family 24C Member 1
- Dehydrogenase/Reductase (SDR Family) Member 11
- Inactive Dehydrogenase/Reductase Isoform

AKR1C1

- Aldo-Keto Reductase Family 1 Member C1
- 3 α -hydroxysteroid dehydrogenases type IV
- 20 α -hydroxysteroid dehydrogenase
- 20 α -HSD
- 20 α (3 α)-HSD this is (stereo selective)
- Dihydrodiol Dehydrogenase 1
- Type II IV (3-Alpha-Hydroxysteroid Dehydrogenase
- Hepatic Dihydrodiol Dehydrogenase

AKR1C2

- Aldo-Keto Reductase Family 1 Member C2
- 3 α -hydroxysteroid dehydrogenase type III
- Dihydrodiol Dehydrogenase 2
- Trans-1,2-Dihydrobenzene-1,2-Diol Dehydrogenase
- Pseudo-Chlordecone Reductase

AKR1C3/17 β HSD5

- 17 β -hydroxysteroid dehydrogenase type 5
- aldoketoreductase 1C3
- 3 α -hydroxysteroid dehydrogenase type II
- Aldo-Keto Reductase Family 1 Member C3
- Prostaglandin F Synthase
- Trans-1,2-Dihydrobenzene-1,2-Diol Dehydrogenase
- Dihydrodiol Dehydrogenase Type I

AKR1C4

- Aldo-Keto Reductase Family 1 Member C4
- 3 α -hydroxysteroid dehydrogenase type 1
- Chlordecone Reductase
- 3 α -HSD
- Dihydrodiol Dehydrogenase Isozyme DD4
- Chlordecone Reductase

SRD5A1

- Steroid 5 α -Reductase 1
- S5AR 1
- SR Type 1
- Steroid-5 α -Reductase, α Polypeptide 1 (3-Oxo-5 α -Steroid Delta 4-Dehydrogenase α 1)
- 3-Oxo-5 α -Steroid 4-Dehydrogenase 1

SRD5A2

- Steroid 5 α -Reductase 2
- Steroid-5 α -Reductase, α Polypeptide 2 (3-Oxo-5 α -Steroid Delta 4-Dehydrogenase α 2)
- Delta 4-Dehydrogenase α 1
- 3-Oxo-5 α -Steroid 4-Dehydrogenase 2

SRD5A3

- Steroid 5 α -Reductase 3
- SR Type 3
- Steroid 5- α -Reductase 2-Like
- Probable Polyprenol Reductase
- Polyprenol Reductase
- 3-Oxo-5 α -Steroid 4-Dehydrogenase 3

STS

- Steroid Sulphatase
- arylsulphatase C
- Steroid Sulphatase (Microsomal), Isozyme S
- Steryl-Sulphate Sulphohydrolase
- Steryl-Sulphatase

SULT1E1

- Estrogen sulphotransferase
- Sulphotransferase Family 1E Member 1

SULT2A1

- Sulphotransferase Family 2A Member 1
- Sulphotransferase Family, Cytosolic, 2A, Dehydroepiandrosterone (DHEA)-Preferring, Member 1
- Dehydroepiandrosterone Sulphotransferase
- Bile-Salt Sulphotransferase 2A1
- Hydroxysteroid Sulphotransferase

SULT2B1

- Sulphotransferase Family 2B Member 1
- Sulphotransferase Family, Cytosolic, 2B, Member 1
- Hydroxysteroid Sulphotransferase 2
- Alcohol Sulphotransferase

SULT1A1

- Sulphotransferase Family 1A Member 1
- Sulphotransferase Family, Cytosolic, 1A, Phenol-Preferring, Member 1
- Phenol-Sulphating Phenol Sulphotransferase 1
- Aryl Sulphotransferase 1
- Thermostable Phenol Sulphotransferase 1
- Phenol Sulphotransferase 1

PANEL III: SYSTEMATIC REVIEW

The tissue expression of the various enzymes was searched systematically using PUBMED (<https://www.ncbi.nlm.nih.gov>) on 20 June 2018 using no time limitation.

The following terms were searched and the indicated number of papers were retrieved

	Search terms
	Lung OR lung cancer OR bone OR brain OR central nervous system OR pancreas OR esophagus OR stomach OR gastric OR small intestine OR duodenum OR jejunum OR ileum OR rectum OR colorectal OR gastro intestinal tract OR reproductive biology OR endometrium OR endometriosis OR endometrial cancer OR endo
AND	HSD17B1 OR 17beta-hydroxysteroid dehydrogenase type 1 OR steroid sulphatase OR steroid sulfatase OR 17beta-hydroxysteroid dehydrogenase type 2 OR 17beta-hydroxysteroid dehydrogenase type 3 OR 17beta-hydroxysteroid dehydrogenase type 4 OR 17beta-hydroxysteroid dehydrogenase type 5 OR 17beta-hydroxysteroid dehydrogenase type 6 OR 17beta-hydroxysteroid dehydrogenase type 7 OR 17beta-hydroxysteroid dehydrogenase type 8 OR 17beta-hydroxysteroid dehydrogenase type 9 OR 17beta-hydroxysteroid dehydrogenase type 10 OR 17beta-hydroxysteroid dehydrogenase type 11 OR 17beta-hydroxysteroid dehydrogenase type 12 OR 17beta-hydroxysteroid dehydrogenase type 13 OR 17beta-hydroxysteroid dehydrogenase type 14 OR 17beta-hydroxysteroid dehydrogenase type 15 OR HSD17B1 OR HSD17B2 OR HSD17B3 OR HSD17B3 OR HSD17B4 OR HSD17B5 OR HSD17B6 OR HSD17B7 OR HSD17B8 OR HSD17B9 OR HSD17B10 OR HSD17B11 OR HSD17B12 OR HSD17B13 OR HSD17B14 OR HSD17B15 OR SULT1E1 OR steroid sulphotransferase OR steroid sulfotransferase OR estrogen sulphotransferase OR estrogen steroid sulfotransferase OR intracrinology OR SULT1E1 OR SULT2A1 OR 5alpha-reductase type 1 OR 5alpha-reductase type 2 OR 5alpha-reductase type 3 OR SRD5A1 OR SRD5A2 OR SRD5A3 OR 3beta-hydroxysteroid dehydrogenase TYPE 1 OR 3beta-hydroxysteroid dehydrogenase TYPE 2 OR HSD3B1 OR HSD3B2 OR AKR1C1 OR AKR1C2 OR AKR1C3 OR AKR1C4 OR AROMATASE OR CYP19A1 OR CYP11A1 OR CYP17A1
NOT	Cell lines OR cell line
Filter	Humans & English
→	<u>TOTAL RETRIEVED PAPERS: 2971 (published from 1962)</u>

After removing reviews, these papers were further filtered manually as shown in the scheme below (left), based on title, abstract or keywords. Finally 192 studies were thoroughly considered for inclusion or exclusion (right), after which selection, 172 papers were included in the present study (papers selected through systematic analysis are reported in Tables VI-VIII).

