

THE WORLD ANTI-DOPING CODE  
**INTERNATIONAL  
STANDARD**



# **PROHIBITED LIST**

JANUARY 2019



**WORLD  
ANTI-DOPING  
AGENCY**  
play true

The official text of the *Prohibited List* shall be maintained by WADA and shall be published in English and French.  
In the event of any conflict between the English and French versions, the English version shall prevail.

**This List shall come into effect on 1 January 2019**

# SUBSTANCES & METHODS PROHIBITED AT ALL TIMES

(IN- AND OUT-OF-COMPETITION)

IN ACCORDANCE WITH ARTICLE 4.2.2 OF THE WORLD ANTI-DOPING CODE, ALL *PROHIBITED SUBSTANCES* SHALL BE CONSIDERED AS "*SPECIFIED SUBSTANCES*" EXCEPT SUBSTANCES IN CLASSES S1, S2, S4.4, S4.5, S6.A, AND *PROHIBITED METHODS* M1, M2 AND M3.

## PROHIBITED SUBSTANCES

### S0 NON-APPROVED SUBSTANCES

Any pharmacological substance which is not addressed by any of the subsequent sections of the *List* and with no current approval by any governmental regulatory health authority for human therapeutic use (e.g. drugs under pre-clinical or clinical development or discontinued, designer drugs, substances approved only for veterinary use) is prohibited at all times.

### S1 ANABOLIC AGENTS

Anabolic agents are prohibited.

#### 1. ANABOLIC ANDROGENIC STEROIDS (AAS)

##### a. Exogenous\* AAS, including:

**1-A**ndrostenediol (5 $\alpha$ -androst-1-ene-3 $\beta$ ,17 $\beta$ -diol);  
1-Androstenedione (5 $\alpha$ -androst-1-ene-3,17-dione);  
1-Androsterone (3 $\alpha$ -hydroxy-5 $\alpha$ -androst-1-ene-17-one);  
**1-T**estosterone (17 $\beta$ -hydroxy-5 $\alpha$ -androst-1-en-3-one);  
**B**olasterone;  
**C**alusterone;  
Clostebol;  
**D**anazol ([1,2]oxazolo[4',5':2,3]pregna-4-en-20-yn-17 $\alpha$ -ol);  
Dehydrochlormethyltestosterone (4-chloro-17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one);  
Desoxymethyltestosterone (17 $\alpha$ -methyl-5 $\alpha$ -androst-2-en-17 $\beta$ -ol and 17 $\alpha$ -methyl-5 $\alpha$ -androst-3-en-17 $\beta$ -ol);  
Drostanolone;  
**E**thylestrenol (19-norpregna-4-en-17 $\alpha$ -ol);  
**F**luoxymesterone;  
Formebolone;  
Furazabol (17 $\alpha$ -methyl [1,2,5]oxadiazolo[3',4':2,3]-5 $\alpha$ -androst-17 $\beta$ -ol);  
**G**estrinone;

**M**estanolone;  
Mesterolone;  
Metandienone (17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one);  
Metenolone;  
Methandriol;  
Methasterone (17 $\beta$ -hydroxy-2 $\alpha$ ,17 $\alpha$ -dimethyl-5 $\alpha$ -androst-3-one);  
Methyldienolone (17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9-dien-3-one);  
Methyl-1-testosterone (17 $\beta$ -hydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-1-en-3-one);  
Methylnortestosterone (17 $\beta$ -hydroxy-17 $\alpha$ -methylestr-4-en-3-one);  
Methyltestosterone;  
Metribolone (methyltrienolone, 17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9,11-trien-3-one);  
Mibolerone;  
**N**orboletone;  
Norclostebol;  
Norethandrolone;  
**O**xabolone;  
Oxandrolone;  
Oxymesterone;  
Oxymetholone;  
**P**rostanozolol (17 $\beta$ -[(tetrahydropyran-2-yl)oxy]-1'H-pyrazolo[3,4:2,3]-5 $\alpha$ -androstane);  
**Q**uinbolone;  
**S**tanozolol;  
Stenbolone;  
**T**etrahydrogestrinone (17-hydroxy-18 $\alpha$ -homo-19-nor-17 $\alpha$ -pregna-4,9,11-trien-3-one);  
Trenbolone (17 $\beta$ -hydroxyestr-4,9,11-trien-3-one);

and other substances with a similar chemical structure or similar biological effect(s).

# 상시 금지되는

## 약물 및 방법

(경기기간 중 및 경기기간 외)

세계도핑방지규약 제4.2.2항에 따라 S1, S2, S4.4, S4.5, S6.a로 분류되는 약물 그리고 M1, M2 및 M3 금지방법 이외의 모든 금지약물은 “특정약물”로 간주된다.

### 금지약물

S0

#### 비승인 약물

금지목록의 어떠한 분류에도 포함되지 않으며, 각국 정부 산하의 보건기구에서 사람의 치료를 위하여 사용하도록 현재 승인하지 않은 모든 약리적 물질 (예: 임상 전 또는 임상 개발 중 또는 생산이 중단된 약물, 합성 마약 및 동물용으로만 승인된 약물)은 항상 금지된다.

S1

#### 동화작용제

동화작용제는 금지된다.

#### 1. 동화작용남성호르몬 스테로이드 (AAS)

##### a. 외인성\* 동화작용남성호르몬 스테로이드,

다음은 포함:

1-Androstenediol (5 $\alpha$ -androst-1-ene-3 $\beta$ ,17 $\beta$ -diol);  
1-Androstenedione (5 $\alpha$ -androst-1-ene-3,17-dione);  
1-Androsterone (3 $\alpha$ -hydroxy-5 $\alpha$ -androst-1-ene-17-one);  
1-Testosterone (17 $\beta$ -hydroxy-5 $\alpha$ -androst-1-en-3-one);  
Bolasterone;  
Calusterone;  
Clostebol;  
Danazol ([1,2]oxazolo[4',5':2,3]pregna-4-en-20-yn-17 $\alpha$ -ol);  
Dehydrochlormethyltestosterone (4-chloro-17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one);  
Desoxymethyltestosterone (17 $\alpha$ -methyl-5 $\alpha$ -androst-2-en-17 $\beta$ -ol and 17 $\alpha$ -methyl-5 $\alpha$ -androst-3-en-17 $\beta$ -ol);  
Drostanolone;  
Ethylestrenol (19-norpregna-4-en-17 $\alpha$ -ol);  
Fluoxymesterone;  
Formebolone;  
Furazabol (17 $\alpha$ -methyl [1,2,5]oxadiazolo[3',4':2,3]-5 $\alpha$ -androst-17 $\beta$ -ol);  
Gestrinone;

Mestanolone;  
Mesterolone;  
Metandienone (17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one);  
Metenolone;  
Methandriol;  
Methasterone (17 $\beta$ -hydroxy-2 $\alpha$ ,17 $\alpha$ -dimethyl-5 $\alpha$ -androst-3-one);  
Methyldienolone (17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9-dien-3-one);  
Methyl-1-testosterone (17 $\beta$ -hydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-1-en-3-one);  
Methylnortestosterone (17 $\beta$ -hydroxy-17 $\alpha$ -methylestr-4-en-3-one);  
Methyltestosterone;  
Metribolone (methyltrienolone, 17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9,11-trien-3-one);  
Mibolone;  
Norboletone;  
Norclostebol;  
Norethandrolone;  
Oxabolone;  
Oxandrolone;  
Oxymesterone;  
Oxymetholone;  
Prostanozolol (17 $\beta$ -[(tetrahydropyran-2-yl)oxy]-1'H-pyrazolo[3,4:2,3]-5 $\alpha$ -androstane);  
Quinbolone;  
Stanozolol;  
Stenbolone;  
Tetrahydrogestrinone (17-hydroxy-18 $\alpha$ -homo-19-nor17 $\alpha$ -pregna-4,9,11-trien-3-one);  
Trenbolone (17 $\beta$ -hydroxyestr-4,9,11-trien-3-one);

그리고 화학적 구조 또는 생물학적 효과가 비슷한 약물들.

**b. Endogenous\*\* AAS and their *Metabolites* and isomers, when administered exogenously, including but not limited to:**

**4-A**ndrostenediol (androst-4-ene-3 $\beta$ ,17 $\beta$ -diol);  
**4-H**ydroxytestosterone (4,17 $\beta$ -dihydroxyandrost-4-en-3-one);  
**5-A**ndrostenedione (androst-5-ene-3,17-dione);  
**7 $\alpha$** -hydroxy-DHEA;  
**7 $\beta$** -hydroxy-DHEA;  
**7**-keto-DHEA;  
**19-N**orandrostenediol (estr-4-ene-3,17-diol);  
19-Norandrostenedione (estr-4-ene-3,17-dione);  
**A**ndrostanolone (5 $\alpha$ -dihydrotestosterone, 17 $\beta$ -hydroxy-5 $\alpha$ -androstan-3-one);  
Androstenediol (androst-5-ene-3 $\beta$ ,17 $\beta$ -diol);  
Androstenedione (androst-4-ene-3,17-dione);  
**B**oldenone;  
Boldione (androsta-1,4-diene-3,17-dione);  
**E**piandrosterone (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one);  
Epi-dihydrotestosterone (17 $\beta$ -hydroxy-5 $\beta$ -androstan-3-one);  
Epitestosterone;  
**N**androlone (19-nortestosterone);  
**P**rasterone (dehydroepiandrosterone, DHEA, 3 $\beta$ -hydroxyandrost-5-en-17-one);  
**T**estosterone.

.....  
**2. OTHER ANABOLIC AGENTS**

**Including, but not limited to:**

Clenbuterol, selective androgen receptor modulators (SARMs, e.g. andarine, LGD-4033, enobosarm (ostarine) and RAD140), tibolone, zeranol and zilpaterol.

**For purposes of this section:**

\* "exogenous" refers to a substance which is not ordinarily produced by the body naturally.

\*\* "endogenous" refers to a substance which is ordinarily produced by the body naturally.

---

**S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES, AND MIMETICS**

The following substances, and other substances with similar chemical structure or similar biological effect(s), are prohibited:

**1. Erythropoietins (EPO) and agents affecting erythropoiesis, including, but not limited to:**

**1.1 Erythropoietin-Receptor Agonists, e.g.**

Darbepoetins (dEPO);  
Erythropoietins (EPO);  
EPO-based constructs [e.g. EPO-Fc, methoxy polyethylene glycol-epoetin beta (CERA)];  
EPO-mimetic agents and their constructs [e.g. CNTO-530, peginesatide].

**1.2 Hypoxia-inducible factor (HIF) activating agents, e.g.**

Argon;  
Cobalt;  
Daprodustat (GSK1278863);  
Molidustat (BAY 85-3934);  
Roxadustat (FG-4592);  
Vadadustat (AKB-6548);  
Xenon.

**1.3 GATA inhibitors, e.g.**

K-11706.

**1.4 TGF-beta (TGF- $\beta$ ) inhibitors, e.g.**

Luspatercept;  
Sotatercept.

**1.5 Innate repair receptor agonists, e.g.**

Asialo EPO;  
Carbamylated EPO (CEPO).

**b. 외인성\*으로 투여된 내인성\*\* 동화작용남성호르몬 스테로이드와 그 대사물질 및 이성질체, 다음을 포함하나 이에 국한되지 않음:**

**4-Androstenediol** (androst-4-ene-3 $\beta$ ,17 $\beta$ -diol);  
**4-Hydroxytestosterone** (4,17 $\beta$ -dihydroxyandrost-4-en-3-one);  
**5-Androstenedione** (androst-5-ene-3,17-dione);  
**7 $\alpha$ -hydroxy-DHEA**;  
**7 $\beta$ -hydroxy-DHEA**;  
**7-keto-DHEA**;  
**19-Norandrostenediol** (estr-4-ene-3,17-diol);  
19-Norandrostenedione (estr-4-ene-3,17-dione);  
**Androstanolone** (5 $\alpha$ -dihydrotestosterone,17 $\beta$ -hydroxy-5 $\alpha$ -androstan-3-one);  
Androstenediol (androst-5-ene-3 $\beta$ ,17 $\beta$ -diol);  
Androstenedione (androst-4-ene-3,17-dione);  
**Boldenone**;  
Boldione (androsta-1,4-diene-3,17-dione);  
**Epiandrosterone** (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one);  
Epi-dihydrotestosterone (17 $\beta$ -hydroxy-5 $\beta$ -androstan-3-one);  
Epitestosterone;  
**Nandrolone** (19-nortestosterone);  
**Prasterone** (dehydroepiandrosterone, DHEA, 3 $\beta$ -hydroxyandrost-5-en-17-one);  
**Testosterone**.

## 2. 기타 동화작용제

**다음은 약물을 포함하나 이에 국한되지 않음:**

Clenbuterol, 선택적 안드로겐 수용체 변조제 (SARMs, 예: andarine, LGD-4033, enobosarm (ostarine), RAD140) tibolone, zeranol과 zilpaterol.

### 본 항목에서:

\* "외인성"이란 자연적으로 체내에서 생성되지 않는 약물

\*\* "내인성"이란 자연적으로 체내에서 생성되는 약물

## S2

### 펩티드호르몬, 성장인자, 관련약물 및 유사제

다음과 같은 약물, 그리고 이와 화학적 구조 또는 생물학적 효과가 유사한 다른 약물은 금지된다:

**1. 에리스로포이에틴 (EPO)과 적혈구 생성 작용제, 다음을 포함하나 이에 국한되지 않음:**

**1.1. 에리스로포이에틴 수용체 작용제, 예.**  
Darbepoetins(dEPO); erythropoietins (EPO);  
EPO 기반 구성체 (예: EPO-Fc, methoxy polyethylene glycol-epoetin beta (CERA));  
EPO 유사 물질과 그 구성체 (예: CNTO-530, peginesatide).

**1.2. 저산소증 유도인자 (HIF) 자극제, 예.**  
Argon;  
Cobalt;  
Daprodustat (GSK1278863);  
Molidustat (BAY 85-3934);  
Roxadustat (FG-4592);  
Vadadustat (AKB-6548);  
Xenon.

**1.3. GATA 억제제, 예.**  
K-11706.

**1.4. TGF-베타 (TGF- $\beta$ ) 억제제, 예.**  
Luspatercept;  
Sotatercept.

**1.5. 자발적 회복 수용체 작용제, 예.**  
Asialo EPO;  
Carbamylated EPO (CEPO).

## 2. Peptide Hormones and their Releasing Factors,

**2.1** Chorionic Gonadotrophin (CG) and Luteinizing Hormone (LH) and their releasing factors in males, e.g. Buserelin, deslorelin, gonadorelin, goserelin, leuprorelin, nafarelin and triptorelin;

**2.2** Corticotrophins and their releasing factors, e.g. Corticorelin;

**2.3** Growth Hormone (GH), its fragments and releasing factors, including, but not limited to:  
Growth Hormone fragments, e.g. AOD-9604 and hGH 176-191;  
Growth Hormone Releasing Hormone (GHRH) and its analogues, e.g. CJC-1293, CJC-1295, sermorelin and tesamorelin;  
Growth Hormone Secretagogues (GHS), e.g. lenomorelin (ghrelin) and its mimetics, e.g. anamorelin, ipamorelin, macimorelin and tabimorelin; GH-Releasing Peptides (GHRPs), e.g. alexamorelin, GHRP-1, GHRP-2 (pralmorelin), GHRP-3, GHRP-4, GHRP-5, GHRP-6, and examorelin (hexarelin).

## 3. Growth Factors and Growth Factor Modulators, including, but not limited to:

**F**ibroblast Growth Factors (FGFs);  
**H**epatocyte Growth Factor (HGF);  
**I**nsulin-like Growth Factor-1 (IGF-1) and its analogues;  
**M**echano Growth Factors (MGFs);  
**P**latelet-Derived Growth Factor (PDGF);  
**T**hymosin- $\beta$ 4 and its derivatives e.g. TB-500;  
**V**ascular-Endothelial Growth Factor (VEGF);

and other growth factors or growth factor modulators affecting muscle, tendon or ligament protein synthesis/ degradation, vascularisation, energy utilization, regenerative capacity or fibre type switching.

---

## S3 BETA-2 AGONISTS

All selective and non-selective beta-2 agonists, including all optical isomers, are prohibited. Including, but not limited to:

**F**enoterol;  
**F**ormoterol;  
**H**igenamine;  
**I**ndacaterol;  
**O**lodaterol;  
**P**rocaterol;  
**R**eproterol;  
**S**albutamol;  
**S**almeterol;  
**T**erbutaline;  
**T**retoquinol (trimetoquinol);  
**T**ulobuterol;  
**V**ilanterol.

### Except:

- Inhaled salbutamol: maximum 1600 micrograms over 24 hours in divided doses not to exceed 800 micrograms over 12 hours starting from any dose;
- Inhaled formoterol: maximum delivered dose of 54 micrograms over 24 hours;
- Inhaled salmeterol: maximum 200 micrograms over 24 hours.

The presence in urine of salbutamol in excess of 1000 ng/mL or formoterol in excess of 40 ng/mL is not consistent with therapeutic use of the substance and will be considered as an *Adverse Analytical Finding (AAF)* unless the *Athlete* proves, through a controlled pharmacokinetic study, that the abnormal result was the consequence of a therapeutic dose (by inhalation) up to the maximum dose indicated above.

## 2. 펩티드 호르몬과 관련 방출 인자

- 2.1.** 남성의 용모성 생식선자극호르몬 (CG)과 황체형성호르몬 (LH) 그리고 관련 방출인자, 예: Buserelin과 deslorelin, gonadorelin, goserelin, leuporelin, nafarelin, triptorelin
- 2.2.** 부신피질 자극 호르몬 (Corticotrophins)과 관련 방출인자, 예. Corticorelin;
- 2.3.** 성장호르몬 (GH)과 그 단편 및 방출인자, 다음을 포함 하나 이에 국한되지 않음: 성장호르몬 단편, 예. AOD-9604 와 hGH 176-191; 성장호르몬방출호르몬 (GHRH)과 그 유사제, 예. CJC-1293, CJC-1295, sermorelin 그리고 tesamorelin; 성장호르몬분비촉진제 (GHS), 예. lenomorelin (ghrelin)과 그 유사제, 예. anamorelin과 ipamorelin, macimorelin, tabimorelin; 성장호르몬분비펩티드 (GHRPs), 예. alexamorelin과 GHRP-1, GHRP-2 (pralmorelin), GHRP-3, GHRP-4, GHRP-5, GHRP-6, examorelin (hexarelin).

## 3. 성장 인자와 성장 인자 조절제.

다음은 포함하나 이에 국한되지 않음:  
섬유아세포성장인자 (FGFs);  
간세포성장인자 (HGF);  
유사인슐린성장인자-1 (IGF-1)과 그 유사제;  
메카노성장인자 (MGFs);  
혈소판유도성장인자 (PDGF);  
Thymosin-β4와 그 유도체, 예. TB-500;  
혈관내피계성장인자 (VEGF);

그리고 근육, 건(腱) 또는 인대 단백질 합성/분해, 혈관신생, 에너지 효율, 재생력, 섬유질 형태 전환에 영향을 미치는 다른 성장인자 또는 성장인자 조절제.

## S3

### 베타-2 작용제

광학이성질체를 포함한 모든 선택적이며 비선택적 베타-2 작용제는 금지된다.

다음은 포함하나 이에 국한되지 않음:

Fenoterol;  
Formoterol;  
Higenamine;  
Indacaterol;  
Olodaterol;  
Procaterol;  
Reproterol;  
Salbutamol;  
Salmeterol;  
Terbutaline;  
Tretoquinol (trimetoquinol);  
Tulobuterol;  
Vilanterol.

#### 예외:

- 흡입에 의한 salbutamol: 최초 사용량에 관계없이 12시간 동안 800마이크로그램을 초과하지 않는 24시간 동안 최대 1600 마이크로그램;
- 흡입에 의한 formoterol: 24시간 동안 최대 54 마이크로그램의 전달량;
- 흡입에 의한 salmeterol: 24시간 동안 최대 200 마이크로그램.

소변시료 내에 1,000ng/ml을 초과하는 salbutamol 또는 40ng/ml을 초과하는 formoterol 검출은 약물의 치료목적 사용과 일치하지 않으며, 만약에 선수가 통제된 약물 동태학적 조사를 통하여 비정상적인 결과가 위 명시된 흡입을 통한 최대 치료 용량에 기인한 것임을 입증하지 못하는 경우 비정상분석결과 (AAF)로 간주된다.

---

## S4 HORMONE AND METABOLIC MODULATORS

The following hormone and metabolic modulators are prohibited:

1. Aromatase inhibitors including, but not limited to:
  - 2-Androst-enol** (5 $\alpha$ -androst-2-en-17-ol);
  - 2-Androst-enone (5 $\alpha$ -androst-2-en-17-ol);
  - 3-Androst-enol** (5 $\alpha$ -androst-3-en-17-ol);
  - 3-Androst-enone (5 $\alpha$ -androst-3-en-17-one);
  - 4-Androst-3,6,17-trione** (6-oxo);
  - Aminoglutethimide;
  - Anastrozole;
  - Androsta-1,4,6-triene-3,17-dione (androstatrienedione);
  - Androsta-3,5-diene-7,17-dione (arimistane);
  - Exemestane**;
  - Formestane**;
  - Letrozole**;
  - Testolactone**.
2. Selective estrogen receptor modulators (SERMs) including, but not limited to:
  - Raloxifene**;
  - Tamoxifen**;
  - Toremifene.
3. Other anti-estrogenic substances including, but not limited to:
  - Clomifene**;
  - Cyclofenil;
  - Fulvestrant**.
4. Agents preventing activin receptor IIB activation including, but not limited, to:
  - Activin A-neutralizing antibodies**;
  - Activin receptor IIB competitors such as:
    - Decoy activin receptors (e.g. ACE-031);
    - Anti-activin receptor IIB antibodies (e.g. bimagrumab);
  - Myostatin inhibitors** such as:
    - Agents reducing or ablating myostatin expression;
    - Myostatin-binding proteins (e.g. follistatin, myostatin propeptide);
    - Myostatin-neutralizing antibodies (e.g. domagrozumab, landogrozumab, stamulumab).

## 5. Metabolic modulators:

- 5.1** Activators of the AMP-activated protein kinase (AMPK), e.g. AICAR, SR9009; and Peroxisome Proliferator Activated Receptor  $\delta$  (PPAR $\delta$ ) agonists, e.g. 2-[2-methyl-4-[(4-methyl-2-[4-(trifluoromethyl)phenyl]thiazol-5-yl)methylthio]phenoxy]acetic acid (GW1516, GW501516);
- 5.2** Insulins and insulin-mimetics;
- 5.3** Meldonium;
- 5.4** Trimetazidine.

---

## S5 DIURETICS AND MASKING AGENTS

The following diuretics and masking agents are prohibited, as are other substances with a similar chemical structure or similar biological effect(s).

### Including, but not limited to:

- Desmopressin; probenecid; plasma expanders, e.g. intravenous administration of albumin, dextran, hydroxyethyl starch and mannitol.
- Acetazolamide; amiloride; bumetanide; canrenone; chlortalidone; etacrynic acid; furosemide; indapamide; metolazone; spironolactone; thiazides, e.g. bendroflumethiazide, chlorothiazide and hydrochlorothiazide; triamterene and vaptans, e.g. tolvaptan.

### Except:

- Drospirenone; pamabrom; and ophthalmic use of carbonic anhydrase inhibitors (e.g. dorzolamide, brinzolamide);
- Local administration of felypressin in dental anaesthesia.

The detection in an *Athlete's Sample* at all times or *In-Competition*, as applicable, of any quantity of the following substances subject to threshold limits: formoterol, salbutamol, cathine, ephedrine, methylephedrine and pseudoephedrine, in conjunction with a diuretic or masking agent, will be considered as an *Adverse Analytical Finding (AAF)* unless the *Athlete* has an approved *Therapeutic Use Exemption (TUE)* for that substance in addition to the one granted for the diuretic or masking agent.



## S4

### 호르몬 및 대사 변조제

다음의 호르몬 및 대사조절인자들은 금지된다:

1. 아로마테이즈 억제제 (Aromatase inhibitors), 다음을 약물 포함하나 이에 국한되지 않음:  
  
2-Androst-enol ( $5\alpha$ -androst-2-en-17-ol);  
2-Androst-enone ( $5\alpha$ -androst-2-en-17-one);  
3-Androst-enol ( $5\alpha$ -androst-3-en-17-ol);  
3-Androst-enone ( $5\alpha$ -androst-3-en-17-one);  
4-Androst-ene-3,6,17 trione (6-oxo);  
Aminoglutethimide;  
Anastrozole;  
Androsta-1,4,6-triene-3,17-dione (androstatrienedione);  
Androsta-3,5-diene-7,17-dione (arimistane);  
Exemestane;  
Formestane;  
Letrozole;  
Testolactone.
2. 선택적 에스트로겐 수용체 조절제 (SERMs), 다음 약물을 포함하나 이에 국한되지 않음:  
Raloxifene;  
Tamoxifen;  
Toremifene.
3. 기타 항에스트로겐류 (anti-estrogenic substances), 다음 약물을 포함하나 이에 국한되지 않음:  
Clomifene;  
Cyclofenil;  
Fulvestrant.
4. 액티빈 수용체 IIB 활성화 억제제, 다음 약물을 포함하나 이에 국한되지 않음:  
액티빈 A-중화 항체;  
데코이 액티빈 수용체와 같은 액티빈 수용체 IIB와 경쟁관계에 있는 수용체(예: ACE-031);  
항액티빈 수용체 IIB 항체 (예: bimagrumab);  
다음과 같은 미오스타틴 억제제: 미오스타틴의 발현을 감소 또는 제거시키는 제제; 미오스타틴 중화 항체 (예: domagrozumab, landogrozumab, stamulumab); 미오스타틴 결합 항체 (예: follistatin, myostatin propeptide);

### 5. 대사변조제:

- 5.1. AMP-활성화 단백질 키나아제 활성화제 (AMPK), 예: AICAR, SR9009; 그리고 Peroxisome 증식 활성화 수용체  $\delta$  (PPAR $\delta$ ) 작용제, 예. 2-(2-methyl-4-((4-methyl-2-(4-(trifluoromethyl)phenyl)thiazol-5-yl)methylthio)phenoxy) acetic acid (GW1516, GW501516);
- 5.2. 인슐린과 인슐린 유사제;
- 5.3. Meldonium;
- 5.4. Trimetazidine;

## S5

### 이뇨제 및 은폐제

다음의 이뇨제와 은폐제들은 금지되며 이와 화학적 구조 또는 생물학적 효과가 유사한 다른 약물들도 금지된다.

### 다음 사항을 포함하나 이에 국한되지 않음:

- 데스모프레신 (Desmopressin); 프로베네시드 (probenecid); 혈장확장제, 예. 정맥투여 형태의 알부민 (albumin), 덱스트란 (dextran), 히드록시에틸 전분 (hydroxyethyl starch), 만니톨 (mannitol).
- Acetazolamide; amiloride; bumetanide; canrenone; chlortalidone; etacrynic acid; furosemide; indapamide; metolazone; spironolactone; thiazides, 예. Bendroflumethiazide. Chlorothiazide 그리고 hydrochlorothiazide; triamterene과 vaptans, 예. tolvaptan.

### 예외:

- Drospirenone; pamabrom; 그리고 탄산탈수효소억제제 (예. dorzolamide, brinzolamide)의 안과적 사용;
- 치과 마취를 위한 felypressin의 국소투여.

formoterol과 salbutamol, cathine, ephedrine, methyl-ephedrine, pseudoephedrine과 같이 한계치가 정해진 약물이 이뇨제 또는 은폐제와 함께 상시 또는 경기기간중의 선수 시료에서 소량이라도 검출될 경우, 이뇨제 또는 은폐제에 대한 치료목적 사용면책 (TUE)과 더불어 해당 약물에 대한 승인된 치료목적 사용면책을 보유하고 있지 않는 한 비정상분석결과 (AAF)로 간주된다.

## PROHIBITED METHODS

---

### M1 MANIPULATION OF BLOOD AND BLOOD COMPONENTS

The following are prohibited:

1. The *Administration* or reintroduction of any quantity of autologous, allogenic (homologous) or heterologous blood, or red blood cell products of any origin into the circulatory system.
2. Artificially enhancing the uptake, transport or delivery of oxygen.  
Including, but not limited to:  
Perfluorochemicals; efaproxiral (RSR13) and modified haemoglobin products, e.g. haemoglobin-based blood substitutes and microencapsulated haemoglobin products, excluding supplemental oxygen by inhalation.
3. Any form of intravascular manipulation of the blood or blood components by physical or chemical means.

---

### M2 CHEMICAL AND PHYSICAL MANIPULATION

The following are prohibited:

1. *Tampering*, or *Attempting to Tamper*, to alter the integrity and validity of *Samples* collected during *Doping Control*.  
Including, but not limited to:  
Urine substitution and/or adulteration, e.g. proteases.
2. Intravenous infusions and/or injections of more than a total of 100 mL per 12-hour period except for those legitimately received in the course of hospital treatments, surgical procedures or clinical diagnostic investigations.

---

### M3 GENE AND CELL DOPING

The following, with the potential to enhance sport performance, are prohibited:

1. The use of polymers of nucleic acids or nucleic acid analogues.
2. The use of gene editing agents designed to alter genome sequences and/or the transcriptional, post-transcriptional or epigenetic regulation of gene expression.
3. The use of normal or genetically modified cells.

## 금지방법

### M1

#### 혈액 및 혈액성분의 조작

다음 사항은 금지된다:

1. 자가혈액, 동종혈액 또는 이종혈액 및 모든 출처의 적혈구 제제를 순환계에 투여 또는 재주입.
2. 산소의 섭취, 운반 또는 전달의 인위적 향상.  
다음 사항을 포함하나 이에 국한되지 않음:  
불소치환화합물; efaproxiral (RSR13)과 변형 헤모글로빈 제품류, (예. 헤모글로빈을 재료로 한 혈액 대체제와 마이크로캡슐로 된 헤모글로빈 제품). 흡입을 통한 산소보충은 제외.
3. 물리적 또는 화학적 수단을 이용한 혈액 또는 혈액성분에 대한 모든 형태의 혈관 내 조작.

### M2

#### 화학적, 물리적 조작

다음 사항은 금지된다:

1. 도핑검사과정에서 채취한 시료의 성분과 유효성을 변조하거나 변조를 시도하는 행위.  
다음에 포함하나 이에 국한되지 않음:  
소변 바꿔치기 및/또는 불순물  
(예. 단백질분해효소) 섞기
2. 12시간 동안 총 100ml보다 많은 양의 정맥투여 및/또는 정맥주사는 금지. 단, 치료, 수술 절차 또는 임상 진단 조사 과정에서 의료기관에 의해 합법적으로 처치된 경우는 제외.

### M3

#### 유전자 및 세포 도핑

경기력 향상의 가능성을 가진 다음과 같은 사항은 금지된다:

1. 핵산 고분자 또는 핵산 유사물의 사용.
2. 유전자 서열을 바꾸기 위해 디자인 된 유전자 편집 제제의 사용과/ 또는 유전자 발현의 전사조절이나 전사후조절, 후성조절.
3. 정상 세포 또는 유전적으로 조작된 세포의 사용.

# SUBSTANCES & METHODS PROHIBITED *IN-COMPETITION*

IN ADDITION TO THE CLASSES S0 TO S5 AND M1 TO M3 DEFINED ABOVE, THE FOLLOWING CLASSES ARE PROHIBITED *IN-COMPETITION*:

## PROHIBITED SUBSTANCES

### S6 STIMULANTS

All stimulants, including all optical isomers, e.g. *d*- and *l*- where relevant, are prohibited.

#### Stimulants include:

##### a: Non-Specified Stimulants:

**A**drafinil;  
Amfepramone;  
Amphetamine;  
Amfetaminil;  
Amiphenazole;  
**B**enfluorex;  
Benzylpiperazine;  
Bromantan;  
**C**lobenzorex;  
Cocaine;  
Cropropamide;  
Crotetamide;  
**F**encamine;  
Fenetylline;  
Fenfluramine;  
Fenproporex;  
Fonturacetam [4-phenylpiracetam (carphedon)];  
Furfenorex;  
**L**isdexamfetamine;  
**M**efenorex;  
Mephentermine;  
Mesocarb;  
Metamphetamine(*d*-);  
p-methylamphetamine;  
Modafinil;  
**N**orfenfluramine;  
**P**hendimetrazine;  
Phentermine;  
Prenylamine;  
Prolintane.

A stimulant not expressly listed in this section is a *Specified Substance*.

##### b: Specified Stimulants.

Including, but not limited to:

**3-M**ethylhexan-2-amine (1,2-dimethylpentylamine);  
**4-M**ethylhexan-2-amine (methylhexanamine);  
4-Methylpentan-2-amine (1,3-dimethylbutylamine);  
**5-M**ethylhexan-2-amine (1,4-dimethylpentylamine);  
**B**enzfetamine;  
**C**athine\*\*;  
Cathinone and its analogues, e.g. mephedrone, methedrone, and  $\alpha$  - pyrrolidinovalerophenone;  
**D**imetamphetamine (dimethylamphetamine);  
**E**phedrine\*\*\*;  
Epinephrine\*\*\*\* (adrenaline);  
Etamivan;  
Etilamphetamine;  
Etilefrine;  
**F**amprofazone;  
Fenbutrazate;  
Fencamfamin;  
**H**eptaminol;  
Hydroxyamphetamine (parahydroxyamphetamine);  
**I**sometheptene;  
**L**evmetamphetamine;  
**M**eclofenoxate;  
Methylenedioxymethamphetamine;  
Methylephedrine\*\*\*;  
Methylphenidate;  
**N**ikethamide;  
Norfenefrine;  
**O**ctopamine;  
Oxilofrine (methylsynephrine);  
**P**emoline;  
Pentetrazol;  
Phenethylamine and its derivatives;  
Phenmetrazine;  
Phenpromethamine;  
Propylhexedrine;  
Pseudoephedrine\*\*\*\*\*;

# 경기기간 중 금지되는 약물 및 방법

앞서 규정된 S0부터 S5, M1부터 M3에 추가하여 다음 분류들이 경기기간 중에 금지된다.

## 금지약물

**S6**

### 흥분제

광학이성질체(예: d-와 l-)를 포함한 모든  
흥분제류는 금지된다.

다음에 포함하는 흥분제:

#### a: 비특정 흥분제:

**A**drafinil;  
Amfepramone;  
Amphetamine;  
Amfetaminil;  
Amiphenazole;  
**B**enfluorex;  
Benzylpiperazine;  
Bromantan;  
**C**lobenzorex;  
Cocaine;  
Cropropamide;  
Crotetamide;  
**F**encamine;  
Fenetylline;  
Fenfluramine;  
Fenproporex;  
Fonturacetam [4-phenylpiracetam (carphedon)];  
Furfenorex;  
**L**isdexamfetamine;  
**M**efenorex;  
Mephentermine;  
Mesocarb;  
Metamphetamine(d-);  
p-methylamphetamine;  
Modafinil;  
**N**orfenfluramine;  
**P**hendimetrazine;  
Phentermine;  
Prenylamine;  
Prolintane.

#### b: 특정 흥분제.

다음에 포함하나 이에 국한되지 않음:

**3-M**ethylhexan-2-amine (1,2-dimethylpentylamine);  
**4-M**ethylhexan-2-amine (methylhexaneamine);  
4-Methylpentan-2-amine (1,3-dimethylbutylamine);  
**5-M**ethylhexan-2-amine (1,4-dimethylpentylamine);  
**B**enzfetamine;  
**C**athine\*\*;  
Cathinone과 그 유사체, 예: mephedrone,  
methedrone,  $\alpha$  - pyrrolidinovalerophenone;  
**D**imetamphetamine (dimethylamphetamine);  
**E**phedrine\*\*\*;  
Epinephrine\*\*\*\* (adrenaline);  
Etamivan;  
Etilamphetamine;  
Etilefrine;  
**F**amprofazone;  
Fenbutrazate;  
Fencamfamin;  
**H**eptaminol;  
Hydroxyamphetamine (parahydroxyamphetamine);  
**I**sometheptene;  
**L**evmetamphetamine;  
**M**eclofenoxate;  
Methylenedioxymethamphetamine;  
Methylephedrine\*\*\*;  
Methylphenidate;  
**N**ikethamide;  
Norfenefrine;  
**O**ctopamine;  
Oxilofrine (methysynephrine);  
**P**emoline;  
Pentetrazol;  
Phenethylamine과 그 유도체;  
Phenmetrazine;  
Phenpromethamine;  
Propylhexedrine;  
Pseudoephedrine\*\*\*\*\*;

위의 목록에 명시되지 않은 흥분제는 특정약물이다.

Selegiline;  
Sibutramine;  
Strychnine;  
Tenamfetamine (methylenedioxyamphetamine);  
Tuaminoheptane;

and other substances with a similar chemical structure or similar biological effect(s).

**Except:**

- Clonidine;
- Imidazole derivatives for topical/ophthalmic use and those stimulants included in the 2019 Monitoring Program\*.

\* Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol, and synephrine: These substances are included in the 2019 Monitoring Program, and are not considered *Prohibited Substances*.

\*\* Cathine: Prohibited when its concentration in urine is greater than 5 micrograms per milliliter.

\*\*\* Ephedrine and methylephedrine: Prohibited when the concentration of either in urine is greater than 10 micrograms per milliliter.

\*\*\*\* Epinephrine (adrenaline): Not prohibited in local administration, e.g. nasal, ophthalmologic, or co-administration with local anaesthetic agents.

\*\*\*\*\* Pseudoephedrine: Prohibited when its concentration in urine is greater than 150 micrograms per milliliter.

---

## S7 NARCOTICS

**The following narcotics are prohibited:**

Buprenorphine;  
Dextromoramide;  
Diamorphine (heroin);  
Fentanyl and its derivatives;  
Hydromorphone;  
Methadone;  
Morphine;  
Nicomorphine;  
Oxycodone;  
Oxymorphone;  
Pentazocine;  
Pethidine.

---

## S8 CANNABINOIDS

**The following cannabinoids are prohibited:**

- Natural cannabinoids, e.g. cannabis, hashish and marijuana,
- Synthetic cannabinoids e.g.  $\Delta^9$ -tetrahydrocannabinol (THC) and other cannabimimetics.

**Except:**

- Cannabidiol.

---

## S9 GLUCOCORTICOIDS

All glucocorticoids are prohibited when administered by oral, intravenous, intramuscular or rectal routes.

**Including but not limited to:**

Betamethasone;  
Budesonide;  
Cortisone;  
Deflazacort;  
Dexamethasone;  
Fluticasone;  
Hydrocortisone;  
Methylprednisolone;  
Prednisolone;  
Prednisone;  
Triamcinolone.

Selegiline;

Sibutramine;

Strychnine;

Tenamfetamine (methylenedioxyamphetamine);

Tuaminoheptane;

그리고 이러한 약물과 화학적 구조 또는 생물학적 효과가 유사한 다른 약물들.

#### 예외:

- Clonidine;
- 2019 모니터링 프로그램에 포함된 흥분제들과 국소적 또는 안과적 치료에 사용되는 imidazole 유도물.

- \* Bupropion과 caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol, synephrine: 이 약물들은 2019 모니터링 프로그램에 포함되며 금지약물에 해당되지 않는다.
- \*\* Cathine: 그 농도가 소변에 ml당 5마이크로그램보다 높을 경우 금지된다.
- \*\*\* Ephedrine과 methylephedrine: 그 농도가 소변에 농도가 ml당 10마이크로그램보다 높을 경우 금지된다.
- \*\*\*\* Epinephrine (adrenaline): 국소투약은 금지되지 않는다, 예: 코나 눈, 국소 마취제와의 복합 투여
- \*\*\*\*\* Pseudoephedrine: 소변 내 농도가 1ml당 150마이크로그램보다 높을 경우 금지된다.

## S7

### 마약

#### 다음의 마약은 금지된다:

Buprenorphine;

Dextromoramide;

Diamorphine (heroin);

Fentanyl과 그 유도체;

Hydromorphone;

Methadone;

Morphine;

Nicomorphine;

Oxycodone;

Oxymorphone;

Pentazocine;

Pethidine.

## S8

### 카나비노이드

#### 다음의 카나비노이드는 금지된다:

- 천연 카나비노이드, 예: 대마초와 해시시, 마리화나,
- 합성 카나비노이드, 예: 델타9-tetrahydrocannabinol (THC) 및 다른 유사 대마초.

#### 예외:

- Cannabidiol.

## S9

### 글루코코르티코이드

경구복용, 정맥주사, 근육주사 또는 좌약으로 투여하는 모든 글루코코르티코이드는 금지된다.

#### 다음은 포함하나 이에 국한되지 않음:

Betamethasone;

Budesonide;

Cortisone;

Deflazacort;

Dexamethasone;

Fluticasone;

Hydrocortisone;

Methylprednisolone;

Prednisolone;

Prednisone;

Triamcinolone.

# SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

## P1 BETA-BLOCKERS

Beta-blockers are prohibited *In-Competition* only, in the following sports, and also prohibited *Out-of-Competition* where indicated.

- Archery (WA)\*
- Automobile (FIA)
- Billiards (all disciplines) (WCBS)
- Darts (WDF)
- Golf (IGF)
- Shooting (ISSF, IPC)\*
- Skiing/Snowboarding (FIS) in ski jumping, freestyle aerials/halfpipe and snowboard halfpipe/big air
- Underwater sports (CMAS) in constant-weight apnoea with or without fins, dynamic apnoea with and without fins, free immersion apnoea, Jump Blue apnoea, spearfishing, static apnoea, target shooting, and variable weight apnoea.

\*Also prohibited *Out-of-Competition*

Including, but not limited to:

<b>A</b> cebutolol;	<b>L</b> abetalol;
Alprenolol;	<b>M</b> etipranolol;
Atenolol;	Metoprolol;
<b>B</b> etaxolol;	<b>N</b> adolol;
Bisoprolol;	<b>O</b> xprenolol;
Bunolol;	<b>P</b> indolol;
<b>C</b> arteolol;	Propranolol;
Carvedilol;	<b>S</b> otalol;
Celiprolol;	<b>T</b> imolol.
<b>E</b> smolol;	



# 특정 종목에서 금지되는 약물

## P1 베타차단제

베타차단제류는 다음 종목에서 경기기간 중에만 금지되며, \*표시되어 있는 경우 경기기간 외에도 금지된다.

- 양궁 (국제양궁연맹; WA)\*
- 자동차 (국제자동차연맹; FIA)
- 당구 (모든 세부 종목) (국제당구연맹; WCBS)
- 다트 (국제다트연맹; WDF)
- 골프 (국제골프연맹; IGF)
- 사격 (국제사격연맹; ISSF, 국제장애인올림픽위원회; IPC)\*
- 스키/스노우보드 (국제스키연맹; FIS): 스키점프와 프리스타일 에어리얼/하프파이프, 스노우보드 하프파이프/빅에어
- 수중 · 핀수영 (세계수중연맹; CMAS): 핀 착용 또는 미착용 콘스탄웨이트 애프니아와 핀 착용 또는 미착용 다이ना믹 애프니아, 프리이머전 애프니아, 점프블루 애프니아, 스피어피싱, 스태틱 점프블루 애프니아, 스피어피싱, 스태틱 애프니아, 목표물 사격과 베리어블웨이트 애프니아

\* 경기기간 외에도 금지되는 종목

다음은 포함하나 이에 국한되지 않는다:

Acebutolol;	Labetalol;
Alprenolol;	Metipranolol;
Atenolol;	Metoprolol;
Betaxolol;	Nadolol;
Bisoprolol;	Oxprenolol;
Bunolol;	Pindolol;
Carteolol;	Propranolol;
Carvedilol;	Sotalol;
Celiprolol;	Timolol.
Esmolol;	

# THE 2019 MONITORING PROGRAM\*

The following substances are placed on the 2019 Monitoring Program:

- 1. Stimulants:** *In-Competition* only: Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol and synephrine.
- 2. Narcotics:** *In-Competition* only: Codeine, hydrocodone and tramadol.
- 3. Glucocorticoids:** *In-Competition* (by routes of administration other than oral, intravenous, intramuscular or rectal) and *Out-of-Competition* (all routes of administration).
- 4. 2-ethylsulfanyl-1H-benzimidazole (bemitil):** *In-* and *Out-of-Competition*.
- 5. Beta-2-agonists:** *In-* and *Out-of-Competition*: any combination of beta-2-agonists.

\*The World Anti-Doping Code (Article 4.5) states: "WADA, in consultation with Signatories and governments, shall establish a monitoring program regarding substances which are not on the Prohibited List, but which WADA wishes to monitor in order to detect patterns of misuse in sport."

# 2019 모니터링 프로그램\*

다음 약물들은 2019 모니터링 프로그램에 포함된다:

1. **흥분제:** 경기기간 중에만 적용: Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol 그리고 synephrine.
2. **마약:** 경기기간 중에만 적용: Codeine, hydrocodone, tramadol.
3. **글루코코르티코이드:** 경기기간 중 (경구투여, 정맥주사, 근육주사, 좌약 이외의 방법으로 투여) 및 경기기간 외 (모든 투여 방법)
4. **2-ethylsulfanyl-1H-benzimidazole (bemitil):** 경기기간 중 및 경기기간 외
5. **베타-2 작용제:** 경기기간 중 및 경기기간 외: 베타-2 작용제의 모든 복합적 사용

\* 세계도핑방지규약 (WADC) 제4.5항: 세계도핑방지기구 (WADA)는 가맹기구 및 각국 정부와 협력하여 금지목록에는 없으나 스포츠에서 약물남용의 유형을 감지하기 위하여 세계도핑방지기구가 감시하고자 하는 약물에 대한 모니터링 프로그램을 수립한다.

# SUMMARY OF MAJOR MODIFICATIONS AND EXPLANATORY NOTES

## 2019 PROHIBITED LIST

### Substances and methods prohibited at all times (In- and Out-of-Competition)

#### Prohibited Substances

##### **S1 ANABOLIC AGENTS**

###### **1a Exogenous Anabolic Androgenic Steroids**

- 4-hydroxytestosterone was transferred to class S1.1b, "Endogenous Anabolic Androgenic Steroids (AAS)", since this substance can be formed endogenously at low concentrations.
- Bolandiol was removed, since it constitutes one of the isomers of 19-norandrostenediol, which is already included under class S1.1b.

###### **1b Endogenous AAS and their *Metabolites* and isomers, when administered exogenously**

- The title of S1.1b "Endogenous Anabolic Androgenic Steroids when administered exogenously" was changed to: "Endogenous AAS and their *Metabolites* and isomers when administered exogenously" to clarify that ALL endogenous AAS and their *Metabolites* and isomers are prohibited when administered exogenously. Therefore, the listed examples now include the endogenous AAS and some of their *Metabolites*/isomers.
- The examples of *Metabolites* and isomers of endogenous AAS were simplified, leaving only those endogenous substances that are currently known to be available in nutritional supplements or that may be used as masking agents (e.g. to affect the "steroid profile"). The currently named examples are:
  - 7 $\alpha$ -hydroxy-DHEA;
  - 7 $\beta$ -hydroxy-DHEA;
  - 4-androstenediol (androst-4-ene-3 $\beta$ ,17 $\beta$ -diol);
  - 5-androstenedione (androst-5-ene-3,17-dione);
  - 7-keto-DHEA;
  - epiandrosterone (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one);
  - epi-dihydrotestosterone (17 $\beta$ -hydroxy-5 $\beta$ -androstan-3-one);
  - epitestosterone.
- All other substances previously listed as examples of *Metabolites*/isomers of endogenous AAS were removed

as specific examples of this class; however, such substances remain prohibited if administered exogenously. The *Prohibited List* usually does not list *Metabolites*, unless it provides useful information to either *Athletes* or stakeholders. The removed *Metabolites* may have multiple names and are not known to be available in nutritional supplements or to have biological activity.

- The analysis of several of these *Metabolites*, as *Markers* of the exogenous administration of endogenous AAS is already covered in specific WADA Technical Documents:
  - 19-Norandrosterone and 19-Noretiocholanolone are *Metabolites* of the 19-norsteroids, Nandrolone, 19-Norandrostenediol and 19-Norandrostenedione, and are covered in the TD19NA;
  - Androsterone, Etiocholanolone, 5 $\alpha$ -androstane-3 $\alpha$ ,17 $\beta$ -diol (5 $\alpha$ Adiol) and 5 $\beta$ -androstane-3 $\alpha$ ,17 $\beta$ -diol (5 $\beta$ Adiol), which are *Metabolites* of Testosterone and its precursors, are defined as *Markers* of the "steroid profile", and are covered in the TDEAAS and TDIRMS; All the other substances previously listed (androstane- and androstenediols), if administered exogenously, are also monitored through GC/C/IRMS analysis of the *Markers* of the "steroid profile" (TDIRMS).
- 2-Androstenone (5 $\alpha$ -androst-2-ene-17-one) was transferred to class S4.1 Aromatase Inhibitors, which better reflects its biological activity. Analogues and isomers of this substance were also included in S4.1, namely 2-Androst-enol (5 $\alpha$ -androst-2-en-17-ol), 3-Androst-enol (5 $\alpha$ -androst-3-en-17-ol) and 3-Androstenone (5 $\alpha$ -androst-3-en-17-one);
- Epiandrosterone (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one) was added as an example, since this substance is available in nutritional supplements.

###### **2 Other Anabolic Agents:**

- Ostarine is now also listed by its International Non-proprietary Name (INN), enobosarm.

# 주요 변경사항 및 주해

## 2019 금지목록

### 상시 금지되는 약물 및 방법 (경기기간 중과 경기기간 외)

#### 금지되는 약물

##### S1

##### 동화작용제

##### 1a 외인성 동화작용남성호르몬 스테로이드

- 4-hydroxytestosterone은 자농도로 체내에서 생성될 수 있으므로 S1.1b 내인성 동화작용남성호르몬 스테로이드로의 예로 이동.
- Bolandiol은 S1.1b 항목에 포함된 19-norandrostenediol의 이성질체에 해당되므로 제외.

##### 1b 외인성으로 투여된 내인성 동화작용남성호르몬 스테로이드와 그 대사물질 및 이성질체

- 모든 내인성 동화작용남성호르몬 스테로이드와 그 대사물질 및 이성질체가 외인성으로 투여되었을 때 금지된다는 것을 명확히 하기 위해 S1.1b의 제목을 "외인성으로 투여된 내인성 동화작용남성호르몬 스테로이드"에서 "외인성으로 투여된 내인성 동화작용남성호르몬 스테로이드와 그 대사물질 및 이성질체"로 변경. 이에 따라 예시 목록에 내인성 동화작용남성호르몬과 그 대사물질 및 이성질체 일부를 포함.
- 내인성 동화작용남성호르몬 스테로이드의 대사물질 및 이성질체의 예는 현재 영양보충제를 통해 얻을 수 있는 것으로 알려지거나 은폐제 (예: "스테로이드 프로파일"에 영향을 주기 위해)로 사용될 수 있는 내인성 약물들만 남기고 단순화.

예시는 다음과 같음:

7 $\alpha$ -hydroxy-DHEA;  
7 $\beta$ -hydroxy-DHEA;  
4-androstenediol (androst-4-ene-3 $\beta$ ,17 $\beta$ -diol);  
5-androstenedione (androst-5-ene-3,17-dione);  
7-keto-DHEA;  
epiandrosterone (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one);  
epi-dihydrotestosterone (17 $\beta$ -hydroxy-5 $\beta$ -androstan-3-one);  
epitestosterone.

- 이전에 내인성 동화작용남성호르몬 스테로이드의 대사물질 및 이성질체의 예로 포함되었던 다른 모든 약물들은 본 분류 항목의 예에서 제외시켰으나 해당 약물들은 외인성으로 투여되었을 경우 금지됨. 일반적으로 금지목록은 선수나 이해관계자들에게

유용한 정보를 제공하지 않는 한 대사물질을 목록에 포함시키지 않음.

제거된 대사물질들은 복수의 명칭을 갖고 있을 수 있고 영양 보충제를 통해 얻을 수 없거나 생물학적 기전을 갖고 있지 않은 것으로 알려짐.

- 외인성으로 투여된 내인성 동화작용남성호르몬 스테로이드의 표지자로서 일부 대사물질을 분석하는 것은 이미 WADA 기술 문서에 포함됨:

19-Norandrosterone과 19-Noretiocholanolone은 19-norsteroids와 Nandrolone, 19-Norandrostenediol, 19-Norandrostenedione의 대사물질로 TD19NA에 포함됨;

테스토스테론과 그 전구물질인 Androsterone과 Etiocholanolone, 5 $\alpha$ -androstane-3 $\alpha$ , 17 $\beta$ -diol (5 $\alpha$ Adiol), 5 $\beta$ -androstane-3 $\alpha$ , 17 $\beta$ -diol (5 $\beta$ Adiol)은 "스테로이드 프로파일"의 표지자로 정의되고 TDEAAS 및 TDIRMS에 포함됨;

이전에 목록에 포함되었던 다른 모든 약물들 (androstane- 및 androstenediols)도 외인성으로 투여되었을 경우 "스테로이드 프로파일" 표지자에 대한 GC/C/IRMS 분석을 통해 모니터링 됨 (TDIRMS).

- 2-Androstenone (5 $\alpha$ -androst-2-ene-17-one)은 생물학적 기전이 더 잘 반영되는 S4.1 아로마테이즈 억제제로 이동. 이 약물의 유사체와 이성질체인 2-Androstenol (5 $\alpha$ -androst-2-en-17-ol), 3-Androstenol (5 $\alpha$ -androst-3-en-17-ol), 3-Androstenone (5 $\alpha$ -androst-3-en-17-one)도 S4.1에 포함;
- Epiandrosterone (3 $\beta$ -hydroxy-5 $\alpha$ -androstan-17-one)도 영양보충제를 통해 얻을 수 있기 때문에 예시에 포함.

##### 2 기타 동화작용제:

- Ostarine의 국제일반명 (INN)인 enobosarm도 목록에 표기.

---

## **S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES, AND MIMETICS**

- More examples of Hypoxia-inducible factor (HIF) activating agents were added. These are daprodustat (GSK1278863) and vadadustat (AKB-6548), while the reference name of molidustat, BAY 85-3934, has been included.
- The title of S2.2 was changed to “Peptide Hormones and their Releasing Factors”, more accurately reflecting the substances in this class.
- Ghrelin and hexarelin are now listed by their INNs, lenomorelin and examorelin, respectively.
- Macimorelin was added as an example of a growth hormone secretagogue.

---

## **S3 BETA-2-AGONISTS**

- Tretoquinol (trimetoquinol) is a beta-2 agonist and was added as an example to S3. It is an ingredient in oral cold and flu medications, particularly in some countries in Asia.

---

## **S4 HORMONE AND METABOLIC MODULATORS**

- 2-Androstene (5 $\alpha$ -androst-2-ene-17-one) was transferred from S1.1b to this class, which better reflects its biological activity. Analogues and isomers of this substance were also included in S4.1, namely 2-Androstene (5 $\alpha$ -androst-2-en-17-ol), 3-Androstene (5 $\alpha$ -androst-3-en-17-ol) and 3-Androstene (5 $\alpha$ -androst-3-en-17-one).
- The title of S4.4 was changed to: “Agents preventing Activin receptor IIB activation”, and several examples are listed. These include myostatin inhibitors such as myostatin-neutralizing antibodies (e.g. domagrozumab, landogrozumab, stamulumab), myostatin-binding proteins (e.g. follistatin, myostatin propeptide), agents reducing or ablating myostatin expression, activin receptor IIB competitors such as e.g. decoy activin receptors (e.g. ACE-031), anti-activin receptor IIB antibodies (e.g. bimagrozumab), and activin A-neutralizing antibodies. This change was made to reflect the multiple ways in which this receptor can be affected.

---

## **Prohibited Methods**

---

### **M3 GENE AND CELL DOPING**

- The title of this class was changed to: “Gene and Cell Doping”, in order to reflect that cells were already included in M3.3. Stem cells are not prohibited for treating injuries as long as their use restores normal function of the affected area and does not enhance function. The term “post-transcriptional” was added to the list of examples to more completely define the processes that can be modified by gene editing.

---

## **Substances and Methods Prohibited In-Competition**

- The wording of the opening sentence was modified to harmonize with Article 4.2.2 of the Code as well as other sections of the List. In this regard, the word “categories” was replaced by “classes”.

---

### **S6 STIMULANTS**

- For consistency in chemical nomenclature, 1,3-dimethylbutylamine is also represented as 4-methylpentan-2-amine. Two additional analogues of methylhexanamine were added as examples: 5-methylhexan-2-amine (1,4-dimethylpentylamine) and 3-methylhexan-2-amine (1,2-dimethylpentylamine).
- Dimethylamphetamine is now listed by its INN dimetamfetamine. Other amphetamine compounds were standardized to align with the INN.

## S2

### 펩티드호르몬과 성장인자, 관련 약물, 유사제

- 저산소증 유도인자 (HIF) 자극제의 예로 daprodustat (GSK1278863)와 vadadustat (AKB-6548)을 추가하고 molidustat의 참조명인 BAY 85-3934를 포함.
- S2.2로 분류된 약물들을 더 정확하게 나타내기 위해 S2.2의 제목을 "펩티드 호르몬과 관련 방출 인자"로 변경.
- Ghrelin과 hexarelin은 국제일반명인 lenomorelin과 examorelin로 각각 표기.
- Macimorelin을 성장호르몬분비촉진제의 예로 추가.

## S3

### 베타-2 작용제

- 베타-2작용제인 Tretiquinol (trimetiquinol)을 S3의 예로 추가. 특히 일부 아시아 국가들에서 경구용 감기 및 독감 치료제의 성분으로 사용됨.

## S4

### 호르몬 및 대사 변조제

- 2-Androst-2-one (5 $\alpha$ -androst-2-ene-17-one)의 생물학적 기전을 더 잘 나타내기 위해 S1.1b에서 S4.1로 이동. 이 약물의 유사체와 이성질체인 2-Androst-2-enol (5 $\alpha$ -androst-2-en-17-ol), 3-Androst-2-enol (5 $\alpha$ -androst-3-en-17-ol), 3-Androst-2-one (5 $\alpha$ -androst-3-en-17-one)도 S4.1에 포함.
- S4.4의 제목을 "액티빈 수용체 IIB 활성화 억제제"로 변경하고 몇 가지 예를 나열. 여기에는 미오스타틴 중화 항체 (예. domagrozumab, landogrozumab, stamulumab)와 미오스타틴 결합 항체 (예. follistatin, myostatin propeptide), 미오스타틴 발현을 감소 또는 제거시키는 제제, decoy activin receptors (예. ACE-031) 처럼 액티빈 수용체 IIB와 경쟁관계에 있는 수용체, 항-액티빈 수용체 IIB 항체 (예. bimagrumab), 액티빈 A-중화 항체와 같은 미오스타틴 억제제가 포함됨. 이 수용체가 영향을 받는 여러 가지 방법을 나타내기 위해 이같이 변경.

## 금지방법

### M3

### 유전자 및 세포 도핑

- 세포가 M3.3에 이미 포함되어 있다는 것을 나타내기 위해 M3의 제목을 "유전자 및 세포 도핑"으로 변경. 줄기세포는 그것의 사용으로 상처 부위의 정상적인 기능을 회복시키되 기능을 향상시키지는 않는 한 상처 치료 목적으로 사용하는 것이 금지되지 않음. 유전자 편집으로 수정 가능한 프로세스들을 보다 완벽하게 정의하기 위해 "전사후조절"이라는 용어를 예시에 추가.

## 경기기간 중 금지되는 약물 및 방법

- 세계도핑방지규약 제4.2.2항 및 목록의 다른 부분들과 조화되도록 첫 문장의 단어를 변경. 이에 맞추어 분류를 표현하는 영어 단어를 "categories"에서 "classes"로 변경.

### S6

### 흥분제

- 화합물명명법에 맞추어 1,3-dimethylbutylamine를 4-methylpentan-2-amine로도 기술. Methylhexanamine의 유사체 두 가지를 예로 추가: 5-methylhexan-2-amine (1,4-dimethylpentylamine)과 3-methylhexan-2-amine (1,2-dimethylpentylamine).
- Dimethylamphetamine을 국제일반명(INN)인 dimetamphetamine으로 목록에 표기. 다른 암페타민 화합물들은 국제일반명칭에 맞추어 표준화.

## Substances Prohibited in Particular Sports

---

### **P1** BETA-BLOCKERS

- Bunolol is a racemic mixture of levobunolol and bunolol, so levobunolol was removed as an example in P1.

\* For further information on previous modifications and clarifications please consult the Prohibited List Q & A on [www.wada-ama.org/en/questions-answers/prohibited-list-qa](http://www.wada-ama.org/en/questions-answers/prohibited-list-qa)



## 특정 종목에서 금지되는 약물

---

P1

베타차단제

- Bunolol이 levobunolol과 bunolol의 라세미 혼합물이기 때문에 levobunolol을 P1의 예에서 제외

[www.wada-ama.org](http://www.wada-ama.org)

