

EPO DETECTION

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1. WHAT IS EPO?



Erythropoietin (EPO) is a peptide hormone that is produced naturally by the human body. EPO is released from the kidneys and acts on the bone marrow to stimulate red blood cell production.

An increase in red blood cells improves the amount of oxygen that the blood can carry to the body's muscles.

2. WHAT ARE THE SIDE-EFFECTS OF EPO MISUSE?



While proper use of EPO has an enormous therapeutic benefit in the treatment of anaemia related to kidney disease, its misuse can lead to serious health risks for athletes who use this substance simply to gain a competitive edge. It is well known that EPO, by thickening the blood, leads to an increased risk of several deadly diseases, such as heart disease, stroke, and cerebral or pulmonary embolism. The misuse of recombinant human EPO may also lead to autoimmune diseases with serious health consequences.

3. WHEN WAS EPO BANNED AS A PERFORMANCE ENHANCING SUBSTANCE?



EPO has been banned since the early 1990s.

4. WHEN WAS A TEST TO DETECT EPO IMPLEMENTED?



A test for EPO was introduced at the 2000 Summer Olympic Games in Sydney (Australia). The test, validated by the International Olympic Committee (IOC), was based on the blood and urine matrix. A blood screening was performed first, and a urine test was then used to confirm possible use of EPO.

In June 2003, WADA's Executive Committee accepted the results of an independent report stating that urine tests alone can be used to detect the presence of recombinant EPO. This report, requested by WADA's stakeholders and commissioned by the Agency to evaluate the validity of urinary and blood tests for detecting the presence of recombinant EPO, concluded that urinary testing is the only scientifically validated method for direct detection of recombinant EPO. This report also recommended that urine testing be used in conjunction with blood screening for a variety of reasons, including the cost savings of performing blood screening prior to testing urine. Some international sports federations still use both urine and blood matrix for the detection of EPO. Recently, the urine test was adapted to blood to perform detection of some new erythropoiesis stimulating agents.

5. IS THE EPO DETECTION METHOD RELIABLE?



The detection method for EPO is valid and reliable.

The method has undergone an extensive scientific validation process and has been used successfully for many years by accredited anti-doping laboratories around the world. It is a well-established procedure widely accepted by the scientific community, as demonstrated by publication in a number of international scientific journals.

Further, in all its decisions relating to EPO, the Court of Arbitration for Sport (CAS) has supported the validity of the EPO detection method. And, at a meeting in September 2005, the WADA Laboratory Committee reiterated its support of the method when properly applied.

6. HOW HAS THE EPO DETECTION METHOD EVOLVED SINCE ITS INTRODUCTION IN 2000?



The conservative approach used in the initial phase of implementation of the method allowed a large number of EPO abusers to escape detection.

Consistent with the advancing science in anti-doping, work is done on an ongoing basis on all detection methods to refine their sensitivity and the interpretation of results. In the case of EPO, based on expert consensus, new interpretation criteria are introduced as science advances for a more discriminant reading of EPO results.

7. WHAT IS WADA DOING IN RELATION TO NEW TYPES OF EPO?



WADA is very much aware of the development of new EPOs and biosimilar EPOs in an expanding market. A number of these new EPOs and biosimilar EPOs are well known and can be detected through current tests.

In addition to constantly refining the existing detection method for EPO and trying to anticipate doping trends, including by closely cooperating with pharmaceutical companies at very early stages of the development of molecules or substances, WADA is currently considering detection methods for EPO that will supplement the existing one and will maximize chances of detecting recombinant EPOs in athletes' samples. It is important to remember that samples can be stored and later re-analysed as science advances. (The statute of limitations set forth in the World Anti-Doping Code is 8 years.)

In order to further improve detection of abnormal blood profiles, WADA is leading the development of a strategy against doping in sport called the "**Athlete Passport** ([//www.wada-ama.org/en/athlete-biological-passport](http://www.wada-ama.org/en/athlete-biological-passport))", which is based on the longitudinal follow-up of an athlete's biological variables. The objective of this strategy, which will be added to other anti-doping strategies including "traditional" testing, is to detect abnormal variations of determined biological variables in order to better target testing and/or sanction those found with abnormal variations.