

# Doping

## Creatine and doping in athletes

1. Creatine is a small molecule derived from an amino acid; it is synthesized by the liver and released into the blood stream.

2. Some of the creatine carried by the blood is transferred to the muscles, where it is transformed into phosphocreatine, a molecule with high energy potential which serves as 'fuel' during muscle contraction.

3. Oral creatine supplementation is intended to increase muscle mass, and improve recovery after physical effort. However, only a very low proportion of the creatine will penetrate effectively into the muscle and can be transformed into phosphocreatine. It has been noted that creatine supplementation has negligible effects on metabolism, and does not lead to any improvement in performance in trained athletes.

by Claude-Louis Gallien\*

4. The risks of pathogenic side effects from creatine food supplements are real, but limited in so far as most of the creatine that is ingested does not go beyond the walls of the intestine and is excreted in stools. On the other hand, intravenous injection of creatine, which increases creatine levels in the blood considerably, may lead to serious nephropathies and metabolic imbalances which could even threaten the life of the subject.

5. The debate on the effectiveness of creatine in improving sports performance could be a smoke screen to hide real doping practices. The masking properties attributed to creatine in the context of anti-doping controls really do exist, but the prac-

tice cannot withstand serious examination and can easily be exposed.

Products sold under the name of creatine are sometimes a mixture of doping substances (anabolic steroids in particular) in which creatine itself only plays an excipient role. These preparations can be used, consciously or not, by sportsmen, which could explain the outbreak of athletes testing positive for anabolic steroids since 1998.

Finally, the effects attributed to creatine could be optimized in the context of very complex physical preparation strategies, coupling very heavy training sessions with the use of various doping products. This formula has certain similarities with the 'stone soup' recipe, the creatine then being no more than a pretext for implementing a proven doping programme.

6. In the economic context of 'market sport', creatine can be seen as a productive source of profit, provided that the target consumers are not limited to a small number of elite athletes. The aim is rather to open the market as widely as possible to those who practise sport.

The development and the media coverage of the controversy surrounding the effects of creatine can be considered as excellent advertising support, given that the general public tends to go on the principle 'that there is no smoke without fire', and that whatever is good for elite athletes is also good for amateurs. The commercialization of preparations containing creatine, but supplemented with doping products might help give credibility to the 'effectiveness' of the product.

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## Nandrolone

The heads of the 27 IOC-accredited laboratories reaffirmed their earlier positions on nandrolone and unlicensed "nutritional supplements" during their meetings that took place from 21 to 25 February in Cologne. After extensive discussion, the laboratory heads released the following statement:

*At the XVIII Manfred Donike Workshop held in Cologne, new research data on nandrolone, its precursors, and its metabolites were presented and discussed. These studies reconfirm the validity of the current levels used by IOC-*

*accredited laboratories, above which they will report on.*

*Furthermore, several presenters gave examples of the problem of mislabelled nutritional supplements which continue to put athletes at risk of contravening the rules. We, therefore, repeat the statement we made last October: We strongly advise governmental authorities to take measures to prohibit the sale, manufacture, and importation of unlicensed preparations of nutritional supplements containing prohibited substances, whether labelled or not.*