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Explanation of WADA Prohibited List and Risks of Nutritional Supplements

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Dietary and Nutritional Supplements and Doping



A reality ...?



What are the nutritional supplements ?

Ingredients of nutritional supplements may not have any pharmacological effects

« means foodstuffs the purpose of which is to supplement the normal diet and which are concentrated sources of nutrients or substances with a nutritional or physiological effect, alone or in combination , marketed in dose form, namely forms such as capsules, pastilles, tablets, pills and other similar forms , sachets of powder, ampoules of liquids, drop dispensing bottles , and other similar forms of liquids and powders designed to taken in measured small unit quantities «

What are medicinal product?

Any substance or combination of substances presented as having properties for treating or preventing disease in human beings

« any substance or combination of substances which may be used in or administrated to human beings either with a view to restoring, correcting or modifying physiological functions by exerting a pharmacological, immunological or metabolic action, or to making a medical diagnosis «



What is Pharmacology ?

- Is the science of drugs and their effects on living systems
- It is the science of what is happening to your body and the drug itself

What is the role of Pharmacology ?

- Every medication we take alters the chemistry within our body
- Pharmacology is to understand why these changes are happening, allowing to develop better drugs

Why is Pharmacology crucial ?

- Discovering new medicines to help to fight diseases
- Improving the effectiveness of medicines
- Reducing unwanted side effects of medicines
- Understanding why individuals differ in the way they respond to certain drugs and why some others cause addiction



What is Clinical Pharmacology?

- Clinical Pharmacology encompasses all aspects of the relationship between drugs and humans/animals
- It is a medical speciality focusing on safe, effective and economic use of medicines
- It is a diverse discipline that both sustains and advances best healthcare



Area of Pharmacology

- Pharmacodynamics
- Pharmacokinetics
- Pharmacogenetics
- Pharmacoepidemiology



Pharmacodynamic

Is the relation between drug concentration at the site of action and the resulting effect, and

the measurement of that relationship within the individual

Example of site of action:

- Immune system

Pharmacokinetics

Is the relation between dose of medication and plasma concentration

Steps in the body:

- Absorption
- Distribution
- Metabolism
- Excretion

Pharmacogenetic

Is the study of variation in DNA sequence as related to drug response

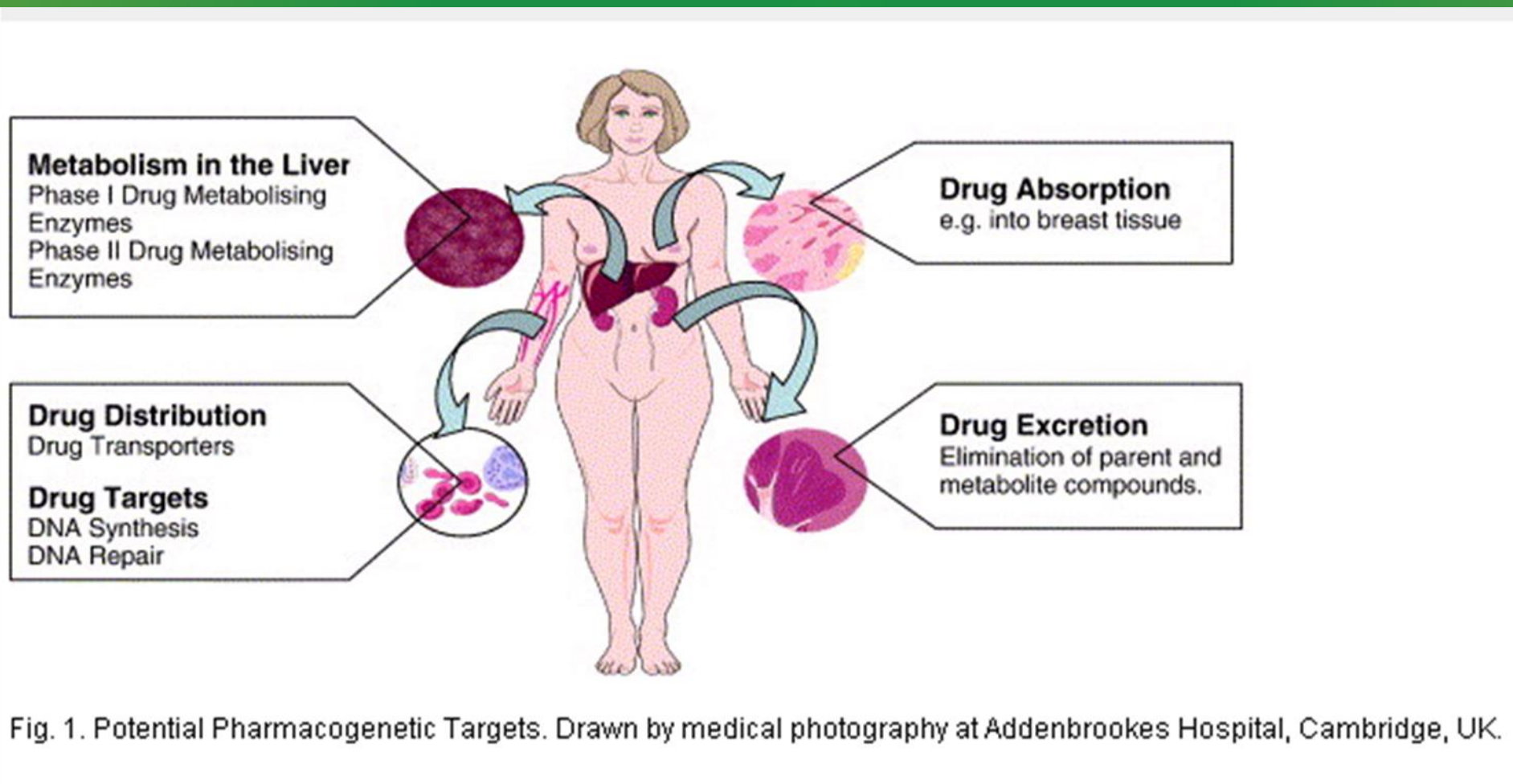


Fig. 1. Potential Pharmacogenetic Targets. Drawn by medical photography at Addenbrookes Hospital, Cambridge, UK.



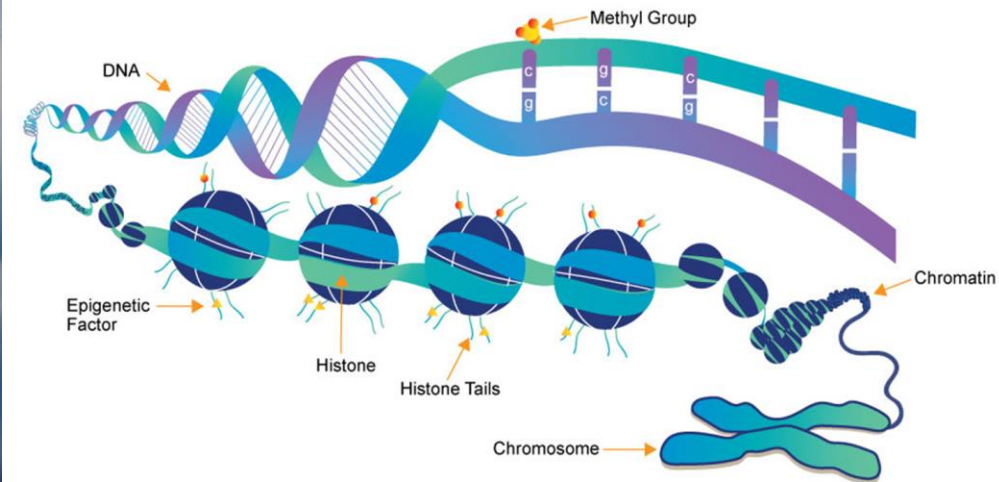
Other genetic factor : EPIGENETICS

Epigenetics is the study of heritable changes in gene expression and that do not involve changes to the underlying DNA sequence

It can be influenced by

- . Age
- . The environment
- . Life style
- . Disease state

It will switch genes expression
ON and/or OFF





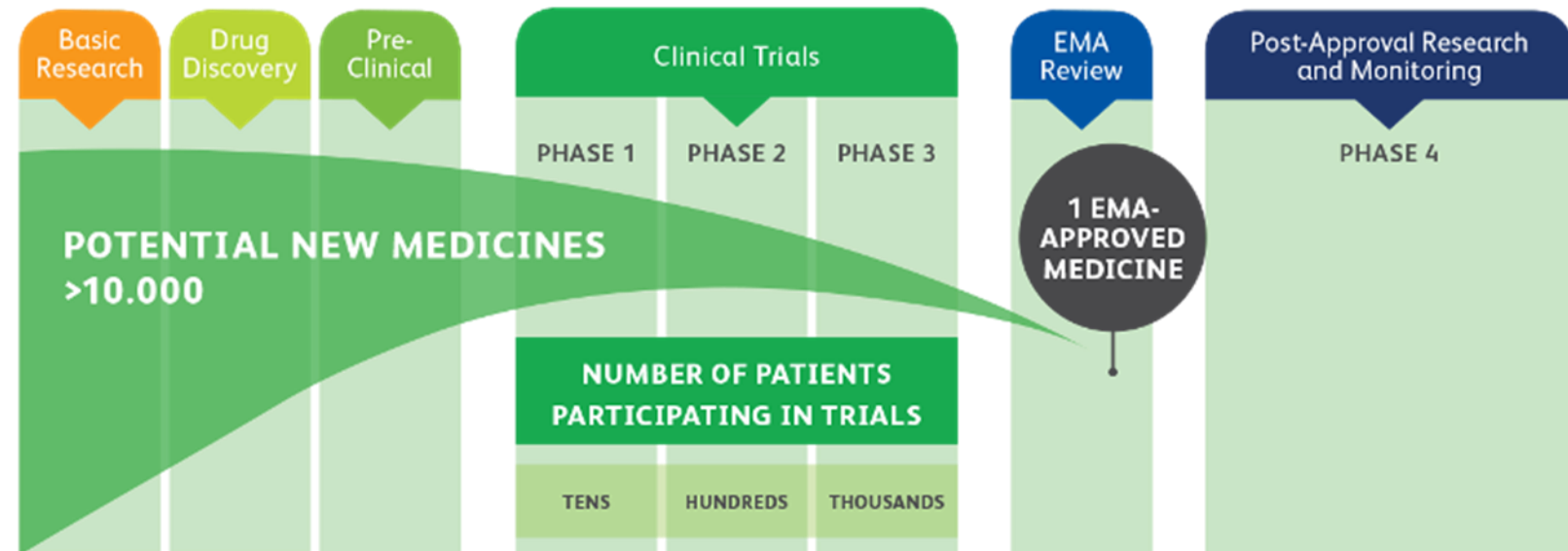
Appendix A: Classification of intrinsic and extrinsic ethnic factors

INTRINSIC		EXTRINSIC
Genetic	Physiological and pathological conditions	Environmental
Gender	Age (children - elderly)	Climate Sunlight Pollution
	Height Bodyweight	Culture Socio-economic factors Educational status Language
	ADME Receptor sensitivity	Medical practice Disease definition/Diagnostic Therapeutic approach Drug compliance
Race		Smoking Alcohol
Genetic polymorphism of the drug metabolism		Food habits Stress
Genetic disease	Diseases	Regulatory practice/GCP Methodology/Endpoints



Pharmacology and drug development

The medicines development pathway





Definition of Pharmacovigilance

Definition by the WHO (1968)

The science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problem

Definition Medicinal Product (EMA, FDA...)

Any substance or combination of substances presented as having properties for treating or preventing disease in human beings;

OFF- LABEL USE of MEDICINE

Use of a medicine for an unapproved indication or an unapproved age group, dosage or route administration



WADA – Position Off-Label use

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. This class covers many different substances including but not limited to BPC-157

Performance Enhancing Drugs PED

The Enhancing of Performance is based on the use of known substances that are marketed with a Marketing Autorisation delivered by official health authorities , but used in indications and or posologies that are not in conformity with the original Marketing Autorisation

It is an « OFF LABEL USE »



WADA PROHIBITED LIST



<https://www.fai.org/anti-doping-rules-procedures>

Substances and methods prohibited at all times (in- and out-of-competition)

A. Prohibited substances

S0. Non-approved substances

S1. Anabolic agents:

- Anabolic androgenic steroids
- Other anabolic agents

S2. Peptide hormones, growth factors, and related substances²

S3. Beta-2 agonists

S4. Hormone and metabolic modulators

S5. Diuretics and other masking agents

B. Prohibited methods

M1. Manipulation of blood and blood components

M2. Chemical and physical manipulation

M3. Gene doping



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Substances and methods prohibited in-competition

S6. Stimulants

S7. Narcotics

S8. Cannabinoids

S9. Glucocorticosteroids

Substances prohibited in particular sports

P1. Alcohol

P2. Beta-blockers



Dietary and Nutritional Supplements

- professional as well as amateur athletes are often taken nutritional supplement
- several positive -controlled athletes claim that it is inadvertent and the result of supplement use

Is this simply an excuse ?

Is it possible that nutritional supplements could lead to a positive test ?

Can an inadvertent positive test be avoided

Results of an investigation....



Inadvertent doping outcome could arise from :

- supplement contains a banned substance as a stated ingredient but athlete is not aware that the substance is banned or could cause a positive doping test
- supplement contains a banned within stated ingredients
Athlete is not aware of the relationship
Ex : presence of Guarana - high caffeine levels
Ma Huang herbal - contains ephedrine
- supplement contains banned substances not mentioned on the label
Ex: herbal preparation - containing ephedrine
Herbal containing alkaloids stimulants
Anabolic supplement /prohormones



Study of a laboratory in Cologne on 634 supplements from 13 countries

Products being sourced from:

- Retain outlet: 91%
- internet /tel/sales : 8%

94 of supplements were found to contain

- Hormone or prohormones (not mentioned on the label)
- With 10% of the products, technical difficulties in analysis such that absence of hormones could not be concluded

Production - marketing and sales of supplements

Market data in EU

- Estimated : 5 billion euros
50% vitamins and minerals
43% (approx. 2,15 billion euros)
supplements containing other substances
- 75% of value in : Germany, Italy, France and UK
- Largely unregulated market



Dietary supplement industry and regulations

Dietary supplement industry is completely unregulated worldwide

- no GMP Directives or regulations (Good Manufacturing Practices)
- only an “Europe Guide for Manufacturers” (not banded for the manufacturer) of supplements

Basic directive in Europe

Directive 2002/46/EC of the European Parliament and of the Council of 10 June 2002

Scope of the Directive :

- requirements concerning labelling and applying to all food supplements regardless of their composition
- however, only applicable to vitamins and minerals
- supplements other than vit/min., subject to national legislation (if there are ...)

Dietary and Nutritional Supplements the WADA's point of view

On the site of the WADA , 3 questions and answers

- **Can an athlete be tested positive from using Dietary and Nutritional Supplement ?**
 - a. Extreme caution is recommended regarding supplement use
 - b. Manufacturing and labelling of supplements may not follow strict rules
 - c. Significant number of positive tests have been attributed to the misuse of supplement (Poorly labelled dietary supplements)
- **Can a dietary and Nutritional Supplement company have their supplements tested by WADA?**

WADA is not involved in the testing of dietary and nutritional supplements
- **Can a supplement company have their products approved by WADA?**

WADA is not involved in any certification process

How to reduce the rate of positive doping outcomes

Educate and inform coaches, athletes, sport science and medicine staff

- develop programs that help athletes to distinguish levels of risk with various supplements
- USADA (U.S. Anti-Doping Agency) nutritional guide title :
https://www.truesport.org/library/documents/resources/nutrition_guide/NutritionGuide.pdf



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Irish Nutrition and Dietetic Institute (INDI)

ADVICE TO ATHLETES

- You need an adapted food and fluid plan for training and competition to optimize sports performances
- Sports nutrition supplements will never make up for poor dietary choices
- Seek advice from qualified professional such as sport dietitian before taking supplements
- Make sure that the professional is familiar with the WADA Prohibited list
- Athlete who compete in sports under anti-doping code must recognise that supplement use exposes them to a risk of a positive doping outcome

POSITIVE CHOICES

is an online Australian portal to help school communities access accurate, up-to-date drug education resources and prevention programs

<https://positivechoices.org.au/>



Next FLY CLEAN Webinar

“TUE procedure and examples when TUE is needed”

14 December 2022 @ 14:00 UTC

GUEST:

Geoffrey W. McCarthy MD MBA DipAvMed, FAI TUE Panel Chair