DIETARY SUPPLEMENTS AS A SOURCE OF ILLEGAL/DESIGNER DRUGS

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Dietary Supplement

“A dietary supplement is something that is taken by mouth, and only contains ingredients, who’s intention is only to supplement the diet”
Not Just US Problem
Prohormones

• First introduced to the market in 1996
  • Androstenedione
  • 4-androstenediols, Norandrodiol, 1-Testosterone
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Move the double bond- 7 times anabolic as Testosterone
BALCO

- Designer steroids, specifically designed, manufactured for athletes
- Norbolethone (“The Clear”)
  - Developed 1966 by Wyeth Laboratories
  - Never released, fears of toxicity
- Tetrahydrogestrinone (THG, “The Clear”)
Steroids Hit “Supplements”

- Desoxymethyltestosterone (Madol, DMT)
  - 1961- invented, never marketed
  - 2005- Patrick Arnold, to market
  - 2010- scheduled CSA

- Methasterone (Superdrol)
  - 1956- Syntex Corporation, anti-tumor
  - 2005- marketed as Superdrol (Matt Cahill)
Pills, Capsules and Powders

• Powerful and often dangerous
• Attempted to circumvent the US Anabolic Steroids Control Act of 1990
• Cult following
• Many instances of hepatotoxicity
• Almost 1 new product every month
• Methylstenbolone, methylclosterbol etc.
Steroid “Supplements”

- Celtic Labs
  - Altered known steroids to circumvent DSHEA
    - Added 3-hydroxyimine instead of 3-keto
      - Methandienone, Mesterolone, Methy-1-Testosterone
  - Patrick Arnold
    - Certifies ingredients from China, assists with synthesis
Steroid “Supplements”

- Trenavar (Estra-4,9,11-triene-3,17-dione)
  - Prohormone to Trenbolone
- Methyltestosterone
- Turinabol
- Boldione
- 4-chloro-
- Methandienone
- Oxymetholone
- Dienolone
Transdermal “Supplements”
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Oral, Liquid “Supplements”
Back to Capsule “Supplements”
Injectable “Supplements”
Stimulant “Supplements”

- Ephedra (ephedrine)
  - Traditional Chinese Medicine
  - Banned in 2004
  - 1000s adverse events, multiple deaths, Steve Belcher
Stimulant “Supplements”

- Methylhexaneamine (1,3,-dimethylpentaylamine or DMAA)
  - Eli Lilly marketed as nasal decongestant
  - Brought to the supplement market, 2006
    - Geranium oil, extract etc.
  - Multiple deaths, athletes, military
  - FDA issues warning letters, 2013
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Stimulant “Supplements”

- Craze
  - N,α-diethyl-phenylethylamine
    - Methamphetamine analog
  - Adverse events
  - Pulled from market
Stimulant “Supplements”

- Oxilofrine (methylsynephrine)
  - Marketed as:
    - pre-workout enhancement
    - Well being and Mind enhancement
Stimulant “Supplements”

- Carphedon
- Octopamine
- Amphetamine
- Methylphenethylamine
- Pseudoephedrine
- Sibutramine
- Modafinil
- Adrafinil
- DMBA (1,3,-dimethylbutylamine)
Other “Supplements”

• Beta-2-agonists
• Diuretics
• Anti-estrogens (PA)
• IGF-1
  • Deer Antler Velvet
Why Difficult to Regulate?

- No established list of dietary ingredients
  - Potentially infinite
- FDA can claim not a dietary ingredient
  - Legal challenges
  - Junk literature
    - Andro, DMAA
- FTC can cease for false advertising
  - No drug claims