**INTRODUCTION & DIAGRAM**

1. **BOLDENONE HISTORY**
2. **CHOLESTEROL**
3. **CHOLESTEROL - PHYTOSTEROLS**
4. **PHYTOSTANOLS**
5. **STEROLS & ANABOLICS**
6. **CONCLUSIONS**

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**1. BOLDENONE HISTORY in BELGIUM**

**BELGIUM UNIQUE**

Q: **WHY ?**

FIRST Bol "problems" ca. 6 YEARS ago

a.o. Thesis M. Van Puymbroeck

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**2. CHOLESTEROL**

**WAXY, FAT-LIKE SUBSTANCE**

present in **ANIMAL FATS** and **SOME vegetable Fats**

Cholesterol esters...

**3. CHOLESTEROL - PHYTOSTEROLS**

**BIOSYNTHESIS of HORMONES from CHOLESTEROL**

Through a **20-OH** and **20, 22-diOH CHOLESTEROL**

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**INTERACTIVE**

Q: **QUESTION ?**

-> **ANSWER**
HORMONE BIOSYNTHESIS (2)

Pregnenolone $\xrightarrow{\Delta^4}$ Progesteron $\xrightarrow{\Delta^4}$ Testosterone

SOURCES of CHOLESTEROL (Man)

ENDOGENOUS 1 g/day

CHOLESTEROL in blood

NUTRITION

< 0.5 g/day

in cattle ?

3. CHOLESTEROL - PHYTOSTEROLS

CHOLESTEROL

$\beta$-SITOSTEROL

Q: DIFFERENCE ?

>............

44... STEROLS

- AVENASTEROL
- SPINASTEROL
- LANOSTEROL
- ..........

ERGOSTEROL

- 4-Demethyl
- 4-Monomethyl
- 4-Dimethyl

STEROLS IN SOME IMPORTANT VEGETABLE FATS

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>% total sterol chole brass. campo stigma sito</th>
</tr>
</thead>
<tbody>
<tr>
<td>palm-</td>
<td>0.06 2.6 - 21.4 13.3 60.7</td>
</tr>
<tr>
<td>arachide-</td>
<td>0.16 - 0.19 0.62 0.54 68.2</td>
</tr>
<tr>
<td>olive-</td>
<td>0.24 - 0.28 0.13 82.1</td>
</tr>
<tr>
<td>soy-</td>
<td>0.23 - 0.31 1.19 19.9 57.2</td>
</tr>
<tr>
<td>rapeseed-</td>
<td>0.74 - 0.78 1.12 0.04 52.4</td>
</tr>
</tbody>
</table>

Phillips J.K. et al.
Free and esterified sterol composition of edible oils
J. Food Composition and analysis 15 (2002) 123-142
CHOLESTEROL = BAD
PHYTOSTEROLS = GOOD

PHYTOSTEROLS are ALSO ATHEROGENOUS (phytosterolemia). But..........

\[<\]

\[<\]

Heinemann et al., Eur J Clin Invest 23 (12)(1993) 827-31

4. PHYTOSTANOLS

STIGMASTANOL
or β-SITOSTANOL

• CAMPESTANOL

\[\text{REDUCED STEROLS}\]

Q : ABSORPTION ?

\[<\]

EXPERIMENT with SITOSTANOL

STRIUM LIPOS (mg/dl)

\[\text{Tot Chol}\]

\[\text{Control}\]

1.8 g/day

2.6 g/day

Start 235 ± 4

232

234

After 12 m 237

214

210

After 2 m C 243

233

236

LDL-Chol

Start 159

153

160

After 12 m 157

138

134

After 2 m C 164

160

153

Q : DECREASE ?

\[<\]

SOME ASPECTS of STEROLS (Men)

\[\text{Chole-}\]

\[\text{Phyto-}\]

\[\text{Stanols}\]

Uptake 400 mg/d

300 mg/d

< 10 mg/d

Source animal

plant

special

Endogenous 1 g/d

-

-

Absorption 50 %

< 5 %

< 1 %

Excretion-speed 40-60 %

> 95 %

> 98 %

CONCLUSIONS

• CHOLESTEROL => ENDOGENOUS HORMONES

Q : IF CHOLESTEROL DECREASES ?

\[<\]

• PHYTOSTEROLS & STANOLS

ALMOST NO ABSORPTION

SO: MANY PHYTOSTEROLS & STANOLS in INTESTINES

SO.......
The amount of British men undergoing a breast reducing surgery doubled in one year.

*More and more men get breast development*, confirms urologist Bo Coolsaet. 

_Cause is the involuntary uptake of female hormones in drinking water and hormonally treated meat._

_Het Nieuwsblad, Tuesday August 2nd 2005_

**STEROLS & ANABOLS**

_MEN get BREASTS....... Bitch's Tits_


**STEROLS as PRECURSORS**

**,tract** from **paper (wood)**

_Mycobacterium cleave sterol side chain giving AED (yield of 63-68%) (Egorova et al, 2002)._

**BETA-SITOSTEROL**

_Microbial bioconversion of metabolites from fermented succulent bamboo shoots_

_K. Sarangthem, Th. N. Singh_

_CURRENT SCIENCE, 84 (2003) 12_

_Fermented shoots of _BAMBOO_ are source of phytosterols. Microorganisms from the 'soilum exudate' involved in microbial bioconversion of phytosterol during fermentation of succulent bamboo shoots were isolated and identified as _Bacillus subtilis_, _B. licheniformis_, _B. coagulans_ and _Micrococcus luteus_.

**Beta-sitosterol** subjected to microbial bioconversion using _B. subtilis_ yielding a considerable amount of ADD.
INVERTEBRATES....

- Neomysis Integer
- Artemia Franciscana
- Lucilia sericata (Luci)

MYIASIS....

SHEEP

CATTLE?

EXPERIMENTS....

- 2 µg analyte added to 2 ml medium
- \textit{in vivo} metabolisation: 4 hours
- Extraction of metabolites with EtAc
- Detection with LC-MS/MS

ADD: RELATIVITY

- 2.00 g of sterols or stanols / day
  - 0.1% of ADD
- 2.00 mg of ADD per day
- 0.05 mg of ethinylestradiol per day

2 g STEROLS = 40 times more androgens as estrogens in the pill
**LITERATURE:**

- Gianfranco BRAMBILLA et al. (2003)
  
  BROTH + CORN OIL + CALF FAECES
  
  ----> ADD (Boldione)

- Sgoifo ROSSI et al. (2004)
  
  CONTAMINATION URINE with FAECES
  
  ----> Bol

- Guiseppe POMPA et al. (2006)
  
  NEOFORMATION Bol in Calf faeces
  
  ----> Drying Rectal faeces : (Bol etc) increases

**α-Bol versus α-T**

![Graph showing concentrations of α-Bol and α-T](image)

**Q : is FAECES a STABLE MATRIX (Bol) ?**

**EXCLUSIVELY MALES ?**

**MAGGOTS from DIFFERENT COUNTRIES**

Different batches ......b.o.
6. CONCLUSIONS on BOLDENONE

- Bol ALMOST EXCLUSIVELY in MALES (T, P ?)
- IF found in FAECES .... MOSTLY in ALL ANIMALS of FARM
- ALWAYS PRESENCE of AED, T and/or P

- Bol in urine : contamination with FAECES
- VEAL CALVES : more Bol if in wooden boxes

- COUNT THE FLIES

--- DISCRIMINATION exoBol - endoBol
--- ULTIMATE VEAL EXPERIMENT

• DRAISCI et al......2006
• MICHEL NIELEN et al. (2004)

--- MILK REPLACERS

LOTS of WORK

• EURORESIDUE VI (2008)
• CARLOS VI (2010)

THANKS