Drug Status Report

**Drug**: Progesterone related substances

A client requested the status of the following fifteen progesterone related substances.

**Drug Name Status**: I - (6\(\beta\))-6-hydroxyprogesterone  
II - 6-Ketoprogesterone  
III - 1-Dehydroprogesterone  
IV - 23, 24-Bisnorcholesterol-4-ene-3-one  
V - 20-Hydroxy bisnoraldehyde  
VI - 9-Dehydroprogesterone  
VII - 23, 24-22-Hydroxycholesterol-4-ene-3-one (22-Hydroxy-23, 24-Bisnorcholesterol-4-ene-3-one)  
VIII and IX - Alpha and beta-bisnoraldehyde (17alpha and beta isomers)  
X and XI - (20R)- and (20S)-20-Hydroxypregna-4-en-3-one  
XII - Pregna-4, 14-diene-3, 20-dione  
XIII - (20R)-3-Oxopregn-4-en-20-yl acetate  
XIV - 21-(Cyclohex-1-en-1-yl)pregn-4-en-3, 20-dione  
XV - 21-Cyclohexyldiene-pregn-4-en-3, 20-dione

These names are a mixture of trivial names, common names and chemical names.

**Chemical Name**: I - (6-beta)-6-Hydroxy-pregna-4-ene-3, 20-dione  
II - 6-Oxo-pregna-4-ene-3, 20-dione  
III - Pregna-1, 4-diene-3, 20-dione  
IV - 3-Oxo-pregna-4-ene-20-carboxylic acid  
V - 20-Hydroxy-3-oxo-pregna-4-ene-20-carboxaldehyde  
VI - Pregna-4, 9-diene-3, 20-dione  
VII - 21-Hydroxy-20-methyl-pregna-4-en-3-one  
VIII and IX - (17alpha) and (17beta)-3-Oxo-pregna-4-ene-20-carboxaldehyde  
X and XI - (20R)- and (20S)-20-Hydroxypregna-4-en-3-one  
XII - Pregna-4, 14-diene-3, 20-dione  
XIII - (20R)-3-Oxopregn-4-en-20-yl acetate  
XIV - 21-(Cyclohex-1-en-1-yl)-pregn-4-en-3, 20-dione  
XV - 21-Cyclohexyldiene-pregn-4-en-3, 20-dione

**Chemical structure**:
Molecular Formula: I - $C_{21}H_{30}O_3$  
II - $C_{21}H_{28}O_3$  
III - $C_{21}H_{30}O_2$  
IV - $C_{22}H_{32}O_3$  
V - $C_{22}H_{32}O_3$  
VI - $C_{21}H_{28}O_2$  
VII - $C_{22}H_{34}O_2$  
VIII and IX - $C_{22}H_{32}O$  
X and XI - $C_{21}H_{32}O_2$  
XII - $C_{21}H_{28}O_2$  
XIII - $C_{23}H_{32}O_3$  
XIV - $C_{27}H_{36}O_2$  
XV - $C_{27}H_{56}O_2$

Pharmacological/chemical class / Application: Drug related substances
International status:

US: These substances are not listed on the schedules to US Controlled Substances Act and are not mentioned on the DEA website.

United Nations: The substances are not listed on the Yellow List - List of Narcotic Drugs under International Control nor the Green List - List of Psychotropic Substances under International Control.

Canadian Status: These substances appear to be a list of related substances to be found in a raw material. Pfizer provides a similar listing for its Progesterone USP (http://www.pfizercentresource.com/sites/centresource/products/Pages/progesterone_USP.pdf). Some of the substances are EP impurities. For example, substances XII-XV are EP Impurities A, E, F, and G. Others, such as I\textsuperscript{1}, II\textsuperscript{2} and III\textsuperscript{3} are recognized metabolites of progesterone. Substance IV\textsuperscript{4} is a starting material for the synthesis of many steroids. The remaining substances have structures consistent with their being progesterone related substances.

None of the substances are structurally similar to the anabolic steroids listed in item 23 of Schedule IV to the CDSA. There are no reports that the substances have anabolic activity.

Recommendation: Substances I to XV are not included in the schedules to the CDSA and are not controlled substances.

December 2, 2008

\begin{itemize}
  \item \textsuperscript{1} Yamada A, Yamada M, Fujita Y, Nishigami T, Nakasho K, Uematsu K., J Biol Chem. 2001 Feb 16;276(7):4604-10.
  \item \textsuperscript{2} Swinney DC, Ryan DE, Thomas PE, Levin W., Biochemistry. 1988 Jul 26;27(15):5461-70.
\end{itemize}