STATUS DECISION OF CONTROLLED AND NON-CONTROLLED SUBSTANCE(S)

Substance: I - 2-Hydroxybutyric acid  
II - 3-Hydroxybutyric acid

Based on the current information available to the Office of Controlled Substances, it appears that the above substance is:

- [ ] Controlled
- ✅ Not Controlled

under the schedules of the Controlled Drugs and Substances Act (CDSA) for the following reason(s):

- The substances are structurally similar to 4-hydroxybutanoic acid (GHB) but cannot be included under in the schedules to the CDSA.

Prepared by: _______________________________ Date: December 6th, 2011
Evelyn C Soo

Verified by: _______________________________ Date: __________
Mark Kozlowski

Approved by: _______________________________ Date: __________
DIRECTOR, OFFICE OF CONTROLLED SUBSTANCES

This status was requested by: Tanya Arcand, OCS
Drug Status Report

**Drug:** I - 2-Hydroxybutyric acid  
II - 3-Hydroxybutyric acid

**Drug Name Status:**  
I - 2-Hydroxybutyric acid  
II - 3-Hydroxybutyric acid are the common names.

**Chemical Name:**  
I - 2-Hydroxybutanoic acid  
II - 3-Hydroxybutanoic acid

**Other Names:**  
I - Alpha-Hydroxybutyrate; alpha-hydroxy-n-butyric acid  
II - Beta-Hydroxybutyric acid; 3-HBA; 3-hydroxy-butyric acid; beta-hydroxy-n-butyric acid

**Chemical structure:**

![Chemical structure](image)

**Molecular Formula:**  
I - C\(_4\)H\(_8\)O\(_3\); II - C\(_4\)H\(_8\)O\(_3\)

**CAS RN:**  
I - 565-70-8; II - 300-85-6

**Pharmacological class / Application:** Fine chemicals

**International status:**

US: 2-Hydroxybutyric acid and 3-Hydroxybutyric acid are not listed on the schedules to the US Controlled Substances Act and are not mentioned anywhere on the DEA website.

United Nations: The substances are not listed on the Yellow List - List of Narcotic Drugs under International Control, the Green List - List of Psychotropic Substances under International Control, nor the Red List - List of Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control.

Canadian Status: 2-Hydroxybutyric acid and 3-hydroxybutyric acid are not listed in the CDSA. 2-Hydroxybutyric acid has been reported in the scientific literature to be formed from 2-
oxobutyrate\textsuperscript{1} and is found in the urine in patients displaying lactic acidosis, while 3-hydroxybutyric acid has been reported to be commonly used in the synthesis of copolymers\textsuperscript{2} and is also secreted by \textit{Bacillus megaterium}\textsuperscript{3}. Currently, 4-hydroxybutanoic acid (GHB) is listed as item 26 in Schedule III to the CDSA as “4-hydroxybutanoic acid (GHB) and any salt thereof”. While these substances display some structural similarities to GHB, they are not salts of GHB and therefore cannot be included under Schedule III to the CDSA.

\textbf{Recommendation:} 2-Hydroxybutyric acid and 3-hydroxybutyric acid CDSA are not included in the schedules to the CDSA and are not controlled substances.

\textbf{Date:} December 6th, 2011


