

**CENTER FOR DRUG EVALUATION AND  
RESEARCH**

*APPLICATION NUMBER:*

**21-196**

**CHEMISTRY REVIEW(S)**

DIVISION OF NEUROPHARMACOLOGICAL DRUG PRODUCTS, HFD-120  
REVIEW OF CHEMISTRY, MANUFACTURING, AND CONTROLS

NDA 21-196

CHEM. REVIEW #5

REVIEW DATE 03-JUN-02

SUBMISSION TYPE  
AMENDMENT

DOCUMENT DATE  
16-MAY-02

CDER DATE  
17-MAY-02

ASSIGNED DATE  
21-MAY-02

NAME AND ADDRESS OF APPLICANT

Orphan Medical, Inc.  
13911 Ridgedale Drive, Suite 250  
Minnetonka, MN 55305

DRUG PRODUCT NAME

Proprietary:  
Nonproprietary/USAN [1966]:  
Code Name/Number:  
Chem. Type/Ther. Class:

Xyrem® oral solution  
sodium oxybate  
  
1P

PHARMACOLOGICAL CATEGORY/INDICATION

Reduce the incidence of cataplexy and to improve the symptom of daytime sleepiness in patients with narcolepsy

DOSAGE FORM

Oral Solution

STRENGTHS

500 mg/mL

ROUTE OF ADMINISTRATION

Oral

DISPENSED

XXX RX

--- OTC

SPECIAL PRODUCTS

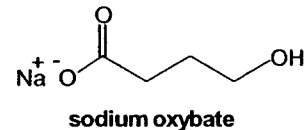
--- Yes

XXX NO

CHEMICAL NAME, STRUCTURAL FORMULA, MOLECULAR FORMULA

Sodium 4-hydroxybutyrate

4-Hydroxybutanoic acid monosodium salt  
Sodium gamma hydroxybutyrate  
C<sub>4</sub>H<sub>7</sub>NaO<sub>3</sub> Mol. Wt. 126.09  
CAS Registry #: 502-85-2



SUPPORTING DOCUMENTS: IND --- IND --- (Treatment IND) and 12 packaging DMF's

RELATED DOCUMENTS: None

CONSULTS: None

REMARKS/COMMENTS: The sponsor has requested a 36-month expiry. The sponsor has submitted updated drug product stability from 6 drug product batches manufactured at --- and 4 drug product batches produced at ---. All batches were easily within specification. The impurity levels do not increase upon storage at 25°C; ---.

CONCLUSIONS & RECOMMENDATIONS: The requested tentative expiry of 36 months is acceptable.

cc: Orig. NDA 21-196  
HFD-120  
HFD-120/TOliver  
HFD-120/PM/AMHomonnay  
HFD-120/MGuzewska  
R/D Init by: MEG

Thomas F. Oliver, Ph.D., Chemist

Filename: n21196.05

2 page(s) have been removed because it contains trade secret and/or confidential information that is not disclosable.

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/s/

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Thomas Oliver  
6/3/02 01:44:43 PM  
CHEMIST

Maryla Guzewska  
6/3/02 01:49:00 PM  
CHEMIST

**NDA 21-196**

**Xyrem® (sodium oxybate) oral solution**

**Orphan Medical, Inc.**

**Chemistry Review**

**Thomas F. Oliver, Ph.D.  
HFD-120**

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