Product Quality Microbiology Review

4 MARCH 2009

NDA: 22-341

Drug Product Name
  Proprietary: Victozza
  Non-proprietary: liraglutide
  Drug Product Priority Classification: S

Review Number: 1

Dates of Submission(s) Covered by this Review

<table>
<thead>
<tr>
<th>Letter</th>
<th>Stamp</th>
<th>Review Request</th>
<th>Assigned to Reviewer</th>
</tr>
</thead>
</table>

Submission History (for amendments only): N/A

Applicant/Sponsor
  Name: Novo Nordisk Inc.
  Address: 100 College Road West, Princeton, NJ 08540
  Representative: Mary Ann McEligott
  Telephone: 609-987-5831

Name of Reviewer: Bryan S. Riley, Ph.D.

Conclusion: Recommended for Approval
Product Quality Microbiology Data Sheet

A. 1. TYPE OF SUBMISSION: Original NDA 505(b)(1)

2. SUBMISSION PROVIDES FOR: A sterile parenteral drug product

3. MANUFACTURING SITE: Novo Nordisk
   Bagsvaerd, Denmark

4. DOSAGE FORM, ROUTE OF ADMINISTRATION AND
   STRENGTH/POTENCY: Sterile preserved aqueous solution in a 3 mL
   glass pen-fill cartridge for SC injection, 6 mg/mL.

5. METHOD(S) OF STERILIZATION: —— Fill

6. PHARMACOLOGICAL CATEGORY: Control of Type 2 Diabetes.

B. SUPPORTING/RELATED DOCUMENTS: DMFs 21494 and ——

C. REMARKS: This was an eCTD submission. An IQA was performed by ONDQA
   (dated 7/2/2008). The majority of the sterility assurance information was provided
   in Type V DMF 21494 (Novo Nordisk). The submission also contained a
   Comparability Protocol for the Addition of Clayton, NC as an additional
   manufacturing site (see Section R. Regional Information).

filename: N022341R1.doc
Executive Summary

I. Recommendations

A. Recommendation on Approvability – This submission is recommended for approval on the basis of product quality microbiology.

B. Recommendations on Phase 4 Commitments and/or Agreements, if Approvable – N/A

II. Summary of Microbiology Assessments

A. Brief Description of the Manufacturing Processes that relate to Product Quality Microbiology – The drug product is sterile filled.

b(4)

B. Brief Description of Microbiology Deficiencies – N/A

C. Assessment of Risk Due to Microbiology Deficiencies – N/A

III. Administrative

A. Reviewer's Signature

Bryan S. Riley, Ph.D.

B. Endorsement Block

James L. McVey
Microbiology Team Leader

C. CC Block

N/A
This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.

/s/

Bryan Riley
3/5/2009 01:01:27 PM
MICROBIOLOGIST

James McVey
3/10/2009 10:50:47 AM
MICROBIOLOGIST
I concur.
PRODUCT QUALITY MICROBIOLOGY FILING CHECKLIST

NDA Number: 22-341  Applicant: Novo Nordisk Inc  Letter Date: 5/23/2008
Drug Name: Victoza  NDA Type: 505(b)(1)  Stamp Date: 5/23/2008

The following are necessary to initiate a review of the NDA application:

<table>
<thead>
<tr>
<th>Content Parameter</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Is the product quality microbiology information described in the NDA and organized</td>
<td>X</td>
<td></td>
<td>Information provided in the NDA and in DMF 21494</td>
</tr>
<tr>
<td>in a manner to allow substantive review to begin? Is it legible, indexed, and/or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>paginated adequately?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Has the applicant submitted an overall description of the manufacturing processes</td>
<td>X</td>
<td></td>
<td>Information provided in the NDA and in DMF 21494</td>
</tr>
<tr>
<td>and microbiological controls used in the manufacture of the drug product?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Has the applicant submitted protocols and results of validation studies</td>
<td>X</td>
<td></td>
<td>Information provided in DMF 21494</td>
</tr>
<tr>
<td>concerning microbiological control processes used in the manufacture of the drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>product?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Are any study reports or published articles in a foreign language? If yes, has</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the translated version been included in the submission for review?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Has the applicant submitted preservative effectiveness studies (if applicable)</td>
<td>X</td>
<td></td>
<td>Information provided in the NDA and in DMF 21494</td>
</tr>
<tr>
<td>and container-closure integrity studies?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Has the applicant submitted microbiological specifications for the drug product</td>
<td>X</td>
<td></td>
<td>Information provided in the NDA and in DMF 21494</td>
</tr>
<tr>
<td>and a description of the test methods?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Has the applicant submitted the results of analytical method verification</td>
<td>X</td>
<td></td>
<td>Information provided in DMF 21494</td>
</tr>
<tr>
<td>studies?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Has the applicant submitted all special/critical studies/data requested during</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-submission meetings and/or discussions?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Is this NDA fileable? If not, then describe why.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments: The application includes a Comparability Protocol for an additional manufacturing site for the drug product (Novo Nordisk, Clayton, NC, USA).

23 June 2008

Bryan S. Riley, Ph.D.
Senior Review Microbiologist, OPS/NDMS

Date

James L. McVey
OPS/NDMS Team Leader

Date
This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.

/s/

__________________________
Bryan Riley
6/23/2008 11:30:42 AM
MICROBIOLOGIST

__________________________
James McVey
6/23/2008 01:54:22 PM
MICROBIOLOGIST
I concur