CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER:

202535Orig1s000

CHEMISTRY REVIEW(S)

MEMORANDUM

Date: July 16, 2012

To: NDA 202-535

From: Terrance Ocheltree, Ph.D., R.Ph.

Director

Division of New Drug Quality Assessment II

ONDQA

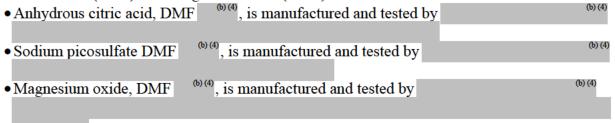
Subject: Tertiary review of ONDQA recommendation for NDA 202-535, sodium picosulfate, magnesium oxide and anhydrous anhydrous citric acid (10 mg, 3.5 g, and 12 g, respectively) powder for oral solution, PicoprepTM. Sodium picosulfate is a new molecular entity (NME).

I have assessed the ONDQA reviews of NDA 202-535 by Hitesh Shroff, Ph.D. The initial ONDQA CMC review was entered into DARRTS on May 16, 2012, with a recommendation for a Complete Response due to an absence of a recommendation from the Office of Compliance on the manufacturing and testing sites acceptability and pending labeling issues. A second CMC review was entered into DARRTS on July 13, 2012 by updating the status of the recommendation from the Office of Compliance. On July 09, 2012 the Office of Compliance entered an Overall Recommendation of "Acceptable" into EES.

All CMC related label/labeling issues were satisfactorily resolved through amendments dated July 13, 2012.

The ONDQA Biopharmaceutics review was not performed since the product is an oral solution (powder is dissolved prior to consumption) when used and the product acts locally within the gastro intestinal tract. Therefore, bioavailability and biopharmaceutics are not an issue.

Picoprep contains three drug substances: sodium picosulfate, anhydrous citric acid and magnesium oxide. The drug substances were each referenced by appropriate Letter of Authorization (LOA) to a Drug Master File (DMF).



All three DMFs were reviewed and found to be adequate to support this NDA. For more information see DMF reviews for DMF completed on May 15, 2012, May 9, 2012 and April 17, 2012, respectively.

Picoprep powder for oral administration is packaged in a sachet

Each sachet contains 16.1 g of powder of white crystalline powder with a faint orange odor.

I concur with the determination that the information as provided in the NDA is adequate to assure the identity, strength, purity, and quality of the drug product and support the recommendation of a drug product shelf life of 24 months for the proposed commercial product when it is stored at controlled room temperature.

Secondary review of the CMC reviews was performed by Moo-Jhong Rhee, Ph.D.

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/s/
TERRANCE W OCHELTREE 07/16/2012

Memorandum DEPARTMENT OF HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE

FOOD AND DRUG ADMINISTRATION

CENTER FOR DRUG EVALUATION AND RESEARCH

Date: July 12, 2012

From: Hitesh Shroff, Ph.D.

Through: Moo-Jhong Rhee, Ph.D.

Chief, Branch IV

New Drug Quality Assessment Division II

ONDQA

To: CMC Review #1 of NDA 202-535

Subject: Final Recommendation

The CMC review #1 has noted the following two pending issues:

1. The Office of Compliance has issued an overall "Withhold" recommendation.

2. Label/labeling issues were not resolved.

And because of these deficiencies, in the CMC Review #1, this NDA was not recommended for approval from the ONDQA perspective.

On July 9, 2012, the Office of Compliance issued the "Acceptable" recommendation for the facilities involved in the NDA (see the **Attachment -1**).

On July 13, 2012, the label and labeling were submitted and they are revised satisfactorily from the ONDQA perspective (see the **Attachment-2**).

Final Recommendation:

This NDA is **now** recommended for approval from the ONDQA perspective.

Attachments:

Attachment-1

EES report

FDA CDER EES ESTABLISHMENT EVALUATION REQUEST SUMMARY REPORT

Application:	NDA 202535/0	000		Spo	onso	or:	FERRING	3 PHARMS A	S	
Org. Code:	180						4 GATEH	IALL DR 3RD	FL	
Priority:	1					1	PARSIPE	PANY, NJ 07	054	
Stamp Date:	16-SEP-2011			Bra	nd N	Name:	Prepopik	(sodium pico	sulfate,	, magnesium
PDUFA Date:	16-JUL-2012			Est	ab. I	Name:				
Action Goal:				Ger	nerio	Name:				
District Goal:	17-MAY-2012			Pro		t Number; Dos	-			-
					10I 001	MG	R ORAL	SOLUTION;	MAGN	IM PICOSULFATE; ESIUM OXIDE; 3.5MG CACID; 12GM
FDA Contacts:	C. TRAN-ZWA	ANETZ	Proje	ct Manager			D-800)			7963877
	H. SHROFF		Revie	w Chemist					3017	7962116
	M. KOWBLAN	ISKY	Team	Leader					3017	7961390
Overall Recommendation	on:	ACCEPTABLE		on 09-JUL-201	12	by A. INYARD		(HFD-32	3)	3017965363
		PENDING		on 08-DEC-20	11	by EES_PROD)			
		PENDING		on 07-DEC-20	11	by EES_PROD)			
		PENDING		on 31-OCT-20	11	by EES_PROD)			
		PENDING		on 31-OCT-20	11	by EES_PROD)			
Establishment:	CFN:	(b) (4)	FEI:	(b) (4))					
				(b) (4))					
DMF No:					L.	AADA:				
Responsibilities:				(b) (4)		AADA.				
Responsibilities.										
Profile:					l.	0.41.04-4	NONE			
Profile:					١,	OAI Status:	NONE			
Last Milestone:	OC REC	OMMENDATION								
Milestone Date:	01-NOV	-2011								
Decision:	ACCEPT	TABLE								
Reason:	BASED	ON PROFILE								

FDA CDER EES ESTABLISHMENT EVALUATION REQUEST SUMMARY REPORT



July 12, 2012 8:11 PM

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Page 2 of 3

FDA CDER EES ESTABLISHMENT EVALUATION REQUEST SUMMARY REPORT

Establishment:	CFN:	FEI:			
			(b) (4)		
DMF No:			(b) (4)	AADA:	
Responsibilities: Profile:				OAI Status:	NONE
	OC RECOMMENDATION			OAI Status.	NONE
Last Milestone:					
Milestone Date:	09-JUL-2012				
Decision:	ACCEPTABLE				
Reason:	DISTRICT RECOMMENDATION	N			
Establishment:	CFN:	FEI:	(b) (4)		
		(b) (4)			
DMF No:				AADA:	
Responsibilities:	FINISHED DOSAGE STABILITY	(TESTER (b) (4)			
Profile:		(0) (4)		OAI Status:	NONE
Last Milestone:	OC RECOMMENDATION				
Milestone Date:	28-DEC-2011				
Decision:	ACCEPTABLE				
Reason:	DISTRICT RECOMMENDATION	N			
Establishment:	CFN:	FEI:	(b) (4)		
		(b) (4)			
DMF No:		42.40		AADA:	
Responsibilities:		(b) (4)			
Dog #10				0.01.01-1	NONE
Profile:				OAI Status:	NONE
Last Milestone:	OC RECOMMENDATION				
Milestone Date:	04-JAN-2012				
Decision:	ACCEPTABLE				
Reason:	DISTRICT RECOMMENDATION	N			

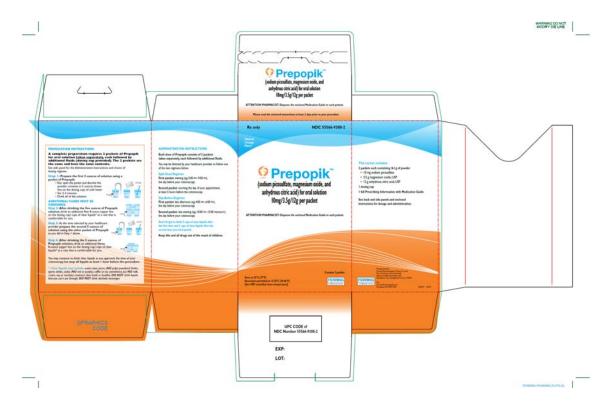
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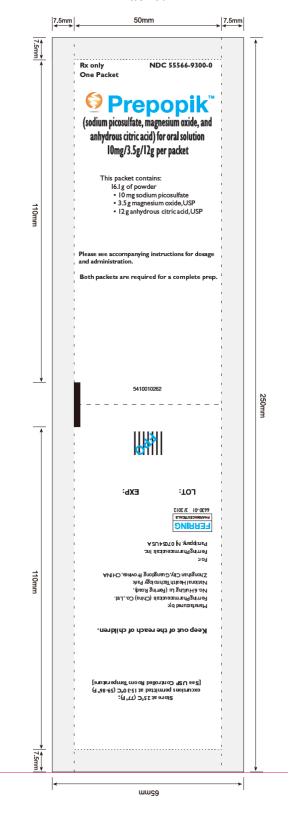
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Attachment-2.

Carton



Packet



Labeling & Package Insert

- 1. Package Insert
 - (a) "Highlights" Section

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use PREPOPIK safely and effectively. See full prescribing information for PREPOPIK.

PREPOPIK (sodium picosulfate, magnesium oxide, and anhydrous citric acid) for oral solution Initial U.S. Approval: 2012

- (b) "Full Prescribing Information" Section
 - #3. Dosage Form and Strength

3 DOSAGE FORMS AND STRENGTHS

For oral solution: each of the two packets contains 10 mg of sodium picosulfate, 3.5 grams of magnesium oxide, and 12.0 grams of anhydrous citric acid in 16.1 grams of powder

#11. Description

11 DESCRIPTION

PREPOPIK (sodium picosulfate, magnesium oxide and anhydrous citric acid) for oral solution is provided in two packets, the contents of each to be dissolved in 5 ounces of cold water and consumed.

Each packet contains 10 mg sodium picosulfate, 3.5 g magnesium oxide and 12 g anhydrous citric acid. The product also contains the following inactive ingredients, potassium hydrogen carbonate, saccharine sodium, and spray dried orange flavor which contains acacia gum, lactose, ascorbic acid and butylated hydroxyanisole. The following is a description of the three active ingredients:

Sodium picosulfate is a stimulant laxative.

Sodium picosulfate

- $\bullet \quad \text{Chemical name: } 4,4^\prime\text{-}(2\text{-pyridylmethylene}) \text{ diphenyl bis(hydrogen sulfate) disodium salt, monohydrate}$
- $\bullet \quad \text{Chemical formula: } C_{18}H_{13}NNa_2O_8S_2.H_2O\\$
- Molecular weight: 499.4
- Structural formula:

Sodium picosulfate

Magnesium citrate, which is formed in solution by the combination of magnesium oxide and anhydrous citric acid, is an osmotic laxative.

Magnesium oxide

Chemical name: Magnesium oxide

Chemical formula: Mg O

Molecular weight: 40.3

Structural formula: Mg O

Anhydrous citric acid

Chemical name: 2-hydroxypropane-1,2,3-tricarboxylic acid Chemical formula: ${\rm C_6H_8O_7}$

Molecular weight: 192.1 Structural formula:

#16. How Supplied/Storage and Handling

16 HOW SUPPLIED/STORAGE AND HANDLING

How Supplied
PREPOPIK is supplied in a carton containing 2 packets, each holding 16.1 grams of powder for oral solution, along with a pre-marked dosing cup. Each packet contains 10 mg sodium picosulfate, 3.5 g magnesium oxide and 12 g anhydrous citric acid. The excipients include potassium hydrogen carbonate, sodium saccharin, spray dried orange flavor which contains acacia gum, lactose, ascorbic acid, and buttelated hydroxyanisole.

Store at 25°C (77°F). Excursions permitted at 15°C to 30°C (59°F to 86°F) [See USP Controlled Room Temperature].

NDC# 55566-9300-2 Kit, 2 packets and cup

MOO JHONG RHEE 07/13/2012 Chief, Branch IV



Chemistry Review Data Sheet

NDA 202-535

Picoprep (sodium picosulfate, magnesium oxide and anhydrous anhydrous citric acid) powder for oral solution 10 mg, 3.5 g, and 12 g

Ferring Pharmaceuticals Inc.

Hitesh Shroff, Ph.D.

Review Chemist

Office of New Drug Quality Assessment
Division of New Drug Quality Assessment II
Branch IV

CMC Review of NDA 202-535
For the Division Gastrointestinal and Inborn Errors
Products (HFD-180)





Chemistry Review Data Sheet

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d day

CHEMISTRY REVIEW



Chemistry Review Data Sheet

Chemistry Review Data Sheet

- 1. NDA 202-535
- 2. REVIEW:#1
- 3. REVIEW DATE: 16-May-2012
- 4. REVIEWER: Hitesh Shroff, Ph.D.
- 5. PREVIOUS DOCUMENTS: N/A
- 6. SUBMISSION(S) BEING REVIEWED:

Submission(s) Reviewed Original Document Date
16-Sep-2011

NAME & ADDRESS OF APPLICANT

Name: Ferring Pharmaceuticals Inc. Address: 4 Gatehall Drive, Third Floor

Parsippany, NJ 07054

Representative: John B. Berryman

Senior Director, Regulatory Affairs

Telephone: 973-796-1746

8. DRUG PRODUCT NAME/CODE/TYPE:

a) Proprietary Name: Picoprep

b) Non-Proprietary Name (USAN): sodium picosulfate, magnesium oxide and anhydrous

citric acid

b) Code Name/# (ONDQA only): None

c) Chem. Type/Submission Priority (ONDQA only):

• Chem. Type: 1 (sodium picosulfate)

• Submission Priority: S

9. LEGAL BASIS FOR SUBMISSION: 505(b)(1)

10. PHARMACOL. CATEGORY: Irrigation

11. DOSAGE FORM: Powder for oral solution

12. STRENGTH/POTENCY: 10 mg Sodium picosulfate, 3.5 g Magnesium oxide

and 12 g Anhydrous citric acid





Chemistry Review Data Sheet

13. ROUTE OF ADMINISTRATION: Oral

14. Rx/OTC DISPENSED: X_Rx OTC

15. SPOTS (SPECIAL PRODUCTS ON-LINE TRACKING SYSTEM:

SPOTS product – Form Completed

X Not a SPOTS product

16. CHEMICAL NAME, STRUCTURAL FORMULA, MOLECULAR FORMULA, MOLECULAR WEIGHT:

Sodium picosulfate

USAN Name: Sodium picosulfate

Chemical name: (pyridine-2-ylmethylene)bisphenyl bis (sodium sulfate),

monohydrate

Disodium [4-[pyridin-2-yl-(4-sulfonatooxyphenyl) methyl]phenyl]

sulfate hydrate

4,4'-(2-Pyridylmethylene)diphenyl bis(hydrogen sulfate) disodium

salt, monohydrate

CAS number: 10040-45-6

Molecular Formula: $C_{18}H_{13}NNa_2O_8S_2.H_20$

Molecular Weight: 499.4

MgO

Magnesium oxide

Compendial /Chemical Name: Magnesium oxide

CAS number: 1309-48-4 Molecular Formula: MgO Molecular Weight: 40.30

Anhydrous citric acid

Compendial Name: Anhydrous citric acid





Chemistry Review Data Sheet

Chemical Name: 1,2,3-Proanetricarboxylic acid, 2-hydroxy citric acid

CAS Name: 77-92-9Molecular Formula: $C_6H_8O_7$ Molecular Weight: 192.13

17. RELATED/SUPPORTING DOCUMENTS:

A. DMFs:

DMF#	TYP E	HOLDER	ITEM REFERENC ED	CODE ¹	STATUS ²	DATE REVIEW COMPLETED	COMMENTS
(ъ) (4) II	(b) (4	sodium picosulfate	1	Adequate	May 9, 2012	Reviewed by Hitesh Shroff, Ph.D.
	II		magnesium oxide	1	Adequate	April 17, 2012	Reviewed by Hitesh Shroff, Ph.D.
	II		anhydrous citric acid	1	Adequate	May 15, 2012	Reviewed by Hitesh Shroff, Ph.D.
	III		(b) (4)	4			Information provided in NDA

¹ Action codes for DMF Table:

1 – DMF Reviewed.

Other codes indicate why the DMF was not reviewed, as follows:

- 2 -Type 1 DMF
- 3 Reviewed previously and no revision since last review
- 4 Sufficient information in application
- 5 Authority to reference not granted
- 6 DMF not available
- 7 Other (explain under "Comments")

B. Other Documents: N/A

18. STATUS:

ONDQA:

CONSULTS/ CMC RELATED REVIEWS	RECOMMENDATION	DATE	REVIEWER
Biometrics	N/A		
EES	Pending		
Pharm/Tox	N/A		
Biopharm	N/A		
LNC	N/A		

² Adequate, Inadequate, or N/A (There is enough data in the application, therefore the DMF did not need to be reviewed)





Chemistry Review Data Sheet

Methods Validation	Acceptable	May 2, 2012	Michael Trehy
DMEPA	N/A		
EA	Claim for categorical exclusion is granted	Mar 8, 2012	Raanan Bloom
Microbiology	N/A		



Executive Summary Section

The Chemistry Review for NDA 202-535

The Executive Summary

I. Recommendations

A. Recommendation and Conclusion on Approvability

The NDA has provided sufficient information to assure identity, strength, purity and quality of the drug product.

However, the label/labeling issues are still *not* satisfactorily resolved.

Also, a site recommendation from the Office of Compliance has *not* been made as of the date of this review.

Therefore, from the ONDQA perspective, this NDA is *not* recommended for approval in its present form per 21 CFR 314.125(b)(6) and (13) until these pending issues are resolved.

B. Recommendation on Phase 4 (Post-Marketing) Commitments, Agreements, and/or Risk Management Steps, if Approvable

No recommendations at this time.

II. Summary of Chemistry Assessments

A. Description of the Drug Product(s) and Drug Substance(s)

(1) Drug Substances

Picoprep contains three active ingredients: sodium picosulfate, anhydrous citric acid and magnesium oxide. Sodium picosulfate is manufactured at

The CMC information is provided in DMF

(2) Drug Product

Picoprep powder for oral administration is a white crystalline powder with a faint orange odor. Picoprep is packaged in a sachet

Each sachet contains 16.1 g of powder. Picoprep contains the following inactive





Executive Summary Section

ingredients, potassium hydro orange flavoring, (b) (4) spr		sodium (b) (4)	and
The key steps in the manufac	cturing process of Picoprep	o are	(b) (4)
	Three production scale bate	ches, each consisting	of (b) (4)
Picoprep powder	were produced.		

The release specification of the finished product include appearance, identification, assay of each active ingredient, uniformity of dosage units, impurities, and microbial limits, and they are deemed adequate to assure the identity, strength, purity, and quality of the drug product.

Based on the stability data from three production scale batches of Picoprep at long term (18 months) and accelerated (6 months) conditions, the proposed 24 months expiration dating period, when stored at room temperature, is granted.

B. Description of How the Drug Product is Intended to be Used

Picoprep powder is a stimulant laxative and osmotic laxative indicated for cleansing of the colon as a preparation for colonoscopy in adults. One dose of PICOPREP consists of 2 pouches, each dissolved in 5 ounces of cold water and administered at separate times. PICOPREP is supplied in cartons containing 2 pouches and a pre-marked dosing cup.

C. Basis for Not-Approval Recommendation

21 CFR 314.125 (b)(6)

• The label/labeling issues are still pending (see the **List of Deficiencies**, p. 63)

21 CFR 314.125 (b)(13)

 No overall "ACCEPTABLE" site recommendation has been made from the Office of Compliance for this application.





Executive Summary Section

III. Administrative

A. Reviewer's Signature

Hitesh Shroff, Ph.D./ May 16, 2012

B. Endorsement Block

Moo-Jhong Rhee, Ph.D., Branch Chief, Branch IV, Division 2

C. CC Block

Marie Kowblansky, Ph.D.

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/s/

HITESH N SHROFF
05/16/2012

MOO JHONG RHEE

MOO JHONG RHEE 05/16/2012 Chief, Branch IV

DEPARTMENT OF HEALTH AND HUMAN SERVICES Public Health Service Food and Drug Administration Center for Drug Evaluation and Research

METHODS VALIDATION REPORT SUMMARY

TO: Hitesh Shroff, CMC Reviewer Office of New Drug Quality Assessment (ONDQA) E-mail Address: hitesh.shroff@fda.hhs.gov Phone: (301)-796-2116 Fax: (301)-796-9877 FROM: FDA Division of Pharmaceutical Analysis Michael Trehy, MVP Coordinator **Suite 1002** 1114 Market Street St. Louis, MO 63101 Phone: (314) 539-3815 Through: Benjamin J. Westenberger, Deputy Director Phone: (314) 539-3869 **SUBJECT:** Methods Validation Report Summary Application Number: NDA 202535 Name of Product: PICOPREP (sodium picosulfate, magnesium oxide, and citric acid) Applicant: Ferring Pharmaceuticals Applicant's Contact Person: John Berryman, Senior Director of Regulatory Affairs Address: 4 Gatehall Drive, Third Floor, Parsippany, NJ 07054 Telephone: (973) 796-1746 Fax: (973) 796-1694

Date Methods Validation Consult Request Form Received by DPA: 11/22/2011

Date Samples Received by DPA: 12/27/2011

Date Analytical Completed by DPA: 5/1/2012

Laboratory Classification: 1. Methods are acceptable for control and regulatory purposes.

2. Methods are acceptable with modifications (as stated in accompanying report).

3. Methods are unacceptable for regulatory purposes.

Comments: Cover memo and summary of results are attached.

Page 1 of 3 Version: 7/13/2011



DEPARTMENT OF HEALTH & HUMAN SERVICES Food and Drug Administration

Center for Drug Evaluation and Research Division of Pharmaceutical Analysis St. Louis, MO 63101 Tel. (314) 539-3815

Date: May 1, 2012

To: Hitesh Shroff, CMC Reviewer (HFD-800)

Marie Kowblansky, CMC Lead (HFD-800)

Through: B. J. Westenberger, Deputy Director, Division of Pharmaceutical Analysis, (HFD-920)

From: Michael Trehy, Chemist (HFD-920)

Subject: Method Validation for NDA 202535

PICOPREP (sodium picosulfate, magnesium oxide, and citric acid)

The method is acceptable for quality control and regulatory purposes.

• Q-3.2.P.5.2 Analytical Procedure-3566; Ver.2.0 PLU-01 Identification, Assay and Content Uniformity of Sodium Picosulfate in PICOPREP

The Division of Pharmaceutical Analysis (DPA) has the following comment pertaining to this method.

The Division of Pharmaceutical Analysis (DPA) strongly suggests the inclusion of system suitability requirements in the procedure. System suitability requirements should be added to the method to assure that the HPLC is performing adequately to obtain quality data. Typical system suitability requirements for an assay by HPLC are reproducibility, peak symmetry and theoretical plates. Reproducibility is an indicator of the performance of the HPLC and peak symmetry and theoretical plates are indicators of the performance of the column and HPLC.

Page 2 of 3 Version: 7/13/2011

Summary of Results

Method: Q-3.2.P.5.2 Analytical Procedure-3566; Ver.2.0 PLU-01 Identification, Assay and Content Uniformity of Sodium Picosulfate in PICOPREP

<u>Test</u>	Found	Specification	
ID		(E	Passes
Assay			
Avg (2)			Passes
CU n=3			Passes

Page 3 of 3 Version: 7/13/2011

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/s/

MICHAEL L TREHY
05/01/2012

BENJAMIN J WESTENBERGER
05/02/2012