

Mail Stop 6010

February 21, 2007

Stephen C. Costalas, Esq.
Pharmacoepia Drug Discovery, Inc.
P.O. Box 5350
Princeton, NJ 08543

**Re: Pharmacoepia Drug Discovery, Inc.
Registration Statement on Form S-3
File Number 333-140765**

Dear Mr. Costalas:

This is to advise you that we have limited our review of the above referenced registration statement to only the issues identified below. We will make no further review of this filing.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have. Feel free to call us at the telephone numbers listed at the end of this letter.

1. Please note that any issues that arise during our examination of your pending confidential treatment requests must be satisfied before we will consider a request for acceleration of the effective date of the registration statement.
2. Please update your financial statements in compliance with Article 3-12 of Regulation S-X.
3. Supplementally, please explain to us the calculations and facts supporting your conclusion that you satisfy the \$75 million aggregate market value requirement for Form S-3 eligibility contained in General Instruction I.B.1 to that form.
4. Please incorporate by reference the periodic and current reports required by Item 12(a)(2) of Form S-3.
5. It appears that you may contemplate filing the indenture referenced as Exhibit 4.5.1. after the registration statement is declared effective. It does not appear that the indenture will be deemed qualified if it is not on file at the time we declare the registration statement effective. Please revise or advise.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

Please contact Michael Reedich at (202) 551-3612 or me at (202) 551-3710 with any questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Ella DeTrizio, Esq.
Dechert LLP
PO Box 5218
Princeton, NJ 08543-5218