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June 29, 2023

Via EDGAR

United States Securities and Exchange Commission
Division of Corporation Finance
Office of Life Sciences
Washington, DC 20549
Attention: Sasha Parikh, Kevin Vaughn, Jimmy McNamara, and Jason Drory

Re: MIRA Pharmaceuticals, Inc.
Amendment No. 2 to Draft Registration Statement on Form S-1
Submitted June 8, 2023
CIK No. 0001904286

Dear Ms. Parikh, Mr. Vaughn, Mr. McNamara, and Mr. Drory:

On behalf of MIRA Pharmaceuticals, Inc. (the "Company"), we are responding to the comments of the staff of the Division of Corporation Finance of the United States Securities and Exchange Commission set forth in your letter to Erez Aminov, the Company's Chief Executive Officer, dated June 15, 2023, relating to the above-referenced filing. Your comments are reproduced below in italicized bold text, followed by our responses on behalf of the Company. Please be advised that the Company is concurrently publicly filing via EDGAR a Registration Statement on Form S-1 (the "Registration Statement").

Amendment No. 2 to Draft Registration Statement on Form S-1

Prospectus Summary
Our Product Candidate in Development
Our Clinical Development Program, page 6

1. ***We note your response to prior comment 11 and revised disclosure on pages 6 and 53. Please provide your basis for your belief that an "overlapping (hybrid) Phase I and II can be designed" for your product candidate or otherwise advise. We note your disclosure that you have not had any discussions with the FDA regarding a hybrid trial design and you disclose elsewhere that "[a]fter the Phase I trial is complete, a Phase II trial will be considered."***

Response: Please be advised that the Company has deleted the sentence regarding a potential overlapping (hybrid) study. The Company has made a corresponding deletion in the "Business" section of the Registration Statement.

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Risk Factors
Certain of our directors and officers may have actual or potential conflicts of interest because of their positions with MyMD, page 14

2. ***We note your response to prior comment 13, including that Dr. Adam Kaplin, your President and Chief Scientific Officer, will continue to serve as the Chief Scientific Officer of MyMD. In light of Dr. Kaplin's other business commitments, please disclose how much time Dr. Kaplin devotes to your operations.***

Response: Please be advised that the Registration Statement has been updated to state that Dr. Kaplin will be a non-employee consultant to the Company and will not have a minimum hours commitment. The Company has included this disclosure in a new risk factor entitled "*Certain of our executive officers will not be employed by us on a full-time basis*." See page 15 of the Registration Statement. For the information of the Staff, the Company has also disclosed in that risk factor that Mr. Aminov and Dr. Chapman will not render full-time service to the Company. The Company has made corresponding changes to the biographies of Mr. Aminov and Dr. Kaplin on pages 63 and 64 and in the descriptions of executive officer agreements beginning on page 71.

Business
Mechanism of Action of MIRA1a, page 47

3. ***We note your response to prior comment 5 and reissue in part. We note you continue to describe MIRA1a as "more efficacious" and "more potent anti-inflammatory, anti-seizure, anticancer properties." In addition, we note your disclosure that "the expected safety and toxicity profile of MIRA1a should provide it with an edge over existing medicines." Please revise these disclosures and similar statements that imply that your product candidate is safe and effective or likely to be approved. You may present objective data resulting from your preclinical and clinical testing without concluding efficacy.***

Response: The Company has deleted the language stating that "MIRA1a is likely more efficacious as a potential therapeutic . . . ." The Company has also deleted the words "and more potent anti-inflammatory, anti-seizure, anti-cancer properties."

4. ***We note your graphic at the top of page 48 appears to depict "% Efficacy" on the y-axis. Please revise your disclosure to clarify what this means or otherwise advise.***

Response: The Company has inserted a few paragraphs below the table to describe in more detail what the table shows, including a description of what "% Efficacy" on the Y-axis means.

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5. ***We note your statement that "[b]ased on preliminary results of [y]our GPCR biosensor assays, the CB2 receptor agonistic effects of MIRA1a are 8-fold more potent than THC and 30-fold more potent than CBD." Please update your disclosure to clarify how your assays measured the CB2 receptor agonistic effects or otherwise advise.***

Response: The Company has added several new paragraphs to this section describing the assays and how they measured the agonistic effects. See page 50 of the Registration Statement.

6. ***We note your updated disclosure on pages 50-52, including your description of the "Thermal Sensitivity Model of Pain," "Trace Fear Conditioning Model of Cognition" and "Psychomotor Vigilance Test" performed. For each study, please revise your disclosure to describe the material details of each study, including, for example, who performed the study and the number of subjects studied.***

Response: The Company has added additional disclosure regarding each of these tests. See the language beginning on pages 52, 53, and 54. The Company has also correspondingly added additional disclosure to the "Prospectus Summary" to further describe the details of these studies.

Our Market Advantage, page 54

7. ***We note your response to prior comment 18 and reissue in part. We note your disclosure states that "MIRA1a is the first cannabinoid that has demonstrated the ability to rapidly and significantly improve cognitive performance with acute use." Please provide us your basis for claim that MIRA1a is the "first." In addition, please include balancing disclosure here when you refer to the figures on page 4 and 51 to clarify that the study performed was a non-human study that was not powered for statistical significance.***

Response: The Company has deleted the words "is the first cannabinoid that." The Company has also clarified that these were non-human studies that weren't powered for statistical significance. This clarification appears in the "Completed Pre-Clinical Tests" box appearing on page 4 and page 51.

Amended and Restated Limited License Agreement with MyMD Pharmaceuticals, page 76

8. ***We note response to prior comment 18 and re-issue in part. Please disclose the termination provisions of the license agreement with MyMD Pharmaceuticals or otherwise advise.***

Response: Please be advised that the license is perpetual, and MyMD does not have a right to terminate it. The Company has added the following sentence to the relevant paragraph on page 78: "This license is perpetual, and MyMD does not have a right to terminate it."

General

9. ***We note your response to comment 28 and re-issue. At first use, please define abbreviations throughout your amended draft registration statement. For example only, we note "THC" and "CBD" on page 1 and "cAMP" on page 48 do not appear to be defined.***

Response: Please be advised that definitions for "THC", "CBD", and "cAMP" have been added to the glossary at the beginning of the Prospectus. The Company did not identify any other abbreviations that it believes were not adequately defined, either in the glossary or elsewhere in the Prospectus.

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Should you have any additional questions, please do not hesitate to contact the undersigned at 813.225.4122.

Best regards,

/s/ Curt P. Creely
Curt P. Creely
