



# Design of Mometasone Furoate Loaded Niosomal System as Drug Delivery Carrier: optimization formula

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Introduction: Some topical applications of compounds combined with glucocorticoids and vitamin D can treat mild to moderate psoriasis, while systemic treatment is needed for severe psoriasis. Mometasone furoate (MF) is a steroidal anti-inflammatory compound that is reported to have clinical indications for treating psoriasis. Transdermal psoriasis therapy can be done by forming MF in the niosomal system, namely a nanovesicles so that the penetration power through the skin layers is higher and will increase the bioavailability of the drug.

Methodology: Optimization was designed using the Box Behnken experimental approach, and niosomes were made using the thin-layer hydration method. Evaluation of particle size, polydispersion index, zeta potential, and entrapment efficiency were used as the research's response variables.

**Results**: The niosomes produced have the appearance of a cloudy liquid (dispersion), milky white in color, and odorless. The size of niosomal vesicles varies around 336.1 nm. In general, a zeta potential greater than ±30 mV is a good indicator of stability. All formulations have good stability so the tendency for aggregate formation or flocculation is lower. Measurement of entrapment efficiency was carried out spectrophotometrically by measuring free drug and drug entrapped in vesicles and obtained EE results ± 87%. The results show that MF can be formed using the niosomes system at MF concentration 1.396 mg/mL, cholesterol 0.5 M, and surfactant (combination) HLB value 4.7.

Tabel 1. Evaluation of Mometasone Furoate Loaded Niosomal System

| Run | 1               | Factor                        |                                  |                          | F  | Response                                    |                                     |
|-----|-----------------|-------------------------------|----------------------------------|--------------------------|--|---|-------------------------------------|
|     | A: HLB<br>Value | B: Ratio Molar<br>Cholesterol | C: Mometasone<br>Furoate (mg/mL) | Yc Particle<br>Size (nm) | Y <sub>2</sub> : Zeta<br>Potential<br>(mV) | Y <sub>3</sub> :<br>Polidispersion<br>Index | Y4:<br>Entrapment<br>Efficiency (%) |
| 1   | 4.70            | 1.0                           | 1.0                              | 477.3                    | -38.30                                     | 0.000                                       | 80.989                              |
| 2   | 6.35            | 1.5                           | 1.0                              | 413.1                    | -27.90                                     | 0.000                                       | 74.599                              |
| 3   | 8.00            | 0.5                           | 1.5                              | 145.4                    | -29.62                                     | 0.562                                       | 61.159                              |
| 4   | 4.70            | 1.5                           | 1.5                              | 451.2                    | -40.24                                     | 0.381                                       | 80.197                              |
| 5   | 6.35            | 1.0                           | 1.5                              | 282.4                    | -28.61                                     | 0.571                                       | 70.026                              |
| 6   | 6.35            | 1.0                           | 1.5                              | 279.1                    | -23.85                                     | 0.571                                       | 68.374                              |
| 7   | 6.35            | 0.5                           | 2.0                              | 250.9                    | -31.51                                     | 0.571                                       | 78.432                              |
| 8   | 8.00            | 1.0                           | 1.0                              | 233.0                    | -26.67                                     | 0.571                                       | 40.695                              |
| 9   | 4.70            | 1.0                           | 2.0                              | 376.4                    | -41.91                                     | 0.571                                       | 90.103                              |
| 10  | 6.35            | 0.5                           | 1.0                              | 298.4                    | -29.51                                     | 0.571                                       | 48.258                              |
| 11  | 6.35            | 1.5                           | 2.0                              | 480.2                    | -29.10                                     | 0.571                                       | 73.542                              |
| 12  | 8.00            | 1.0                           | 2.0                              | 306.5                    | -21.75                                     | 0.571                                       | 68.913                              |
| 13  | 6.35            | 1.0                           | 1.5                              | 395.6                    | -30.13                                     | 0,000                                       | 76.198                              |
| 14  | 6.35            | 1.0                           | 1.5                              | 428.2                    | -33.66                                     | 0.000                                       | 77.676                              |
| 15  | 6.35            | 1.0                           | 1.5                              | 360.6                    | -33.44                                     | 0.571                                       | 62.550                              |
| 16  | 4.70            | 0.5                           | 1.5                              | 485.0                    | -58.96                                     | 0.000                                       | 88.630                              |
| 17  | 8.00            | 1.5                           | 1.5                              | 276.9                    | -32.79                                     | 0.571                                       | 75.242                              |

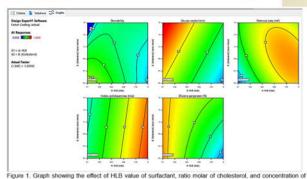


Figure 1. Graph showing the effect of HLB value of surfactant, ratio molar of cholesterol, and concentration of mometasone furoate on particle size, zeta potential, polidispersion index, and entrapment efficiency of noisome mometasone furoate.

Table 2. Optimal Formula of Niosome Mometason Furoate

| Number | HLB         | Cholesterol | [Mometasone] | Particle<br>Size | Zeta<br>Potential | Polidispersion<br>Index | Entrapment<br>Efficiency | Desirability |          |
|--------|-------------|-------------|--------------|------------------|-------------------|-------------------------|--------------------------|--------------|----------|
| Goal   | is in range | is in range | is in range  | minimize         | minimize          | is target = 0.15        | maximize                 |              |          |
| 1.     | 4.700       | 0.500       | 1.396        | 397.926          | -56.171           | 0.219                   | 83.125                   | 0.642        | Selected |
| 2.     | 4.700       | 0.500       | 1.392        | 397.933          | -56.139           | 0.218                   | 83.044                   | 0.642        |          |
| 3.     | 4.700       | 0.500       | 1.401        | 397.917          | -56.211           | 0.220                   | 83.229                   | 0.642        |          |
| 4.     | 4.700       | 0.500       | 1.413        | 397.894          | -56.312           | 0.224                   | 82.724                   | 0.642        |          |
| 5.     | 4.700       | 0.500       | 1.378        | 397.961          | -56.011           | 0.214                   | 82.636                   | 0.642        |          |
| 6.     | 4.700       | 0.500       | 1.374        | 397.968          | -56.974           | 0.213                   | 82.531                   | 0.642        |          |
| 7.     | 4.700       | 0.500       | 1.370        | 397.977          | -55.929           | 0.211                   | 82.531                   | 0.642        |          |
| 8.     | 4.700       | 0.500       | 1.363        | 397.989          | -55.866           | 0.210                   | 82.383                   | 0.642        |          |
| 9.     | 4.700       | 0.500       | 1.433        | 397.854          | -56.469           | 0.229                   | 83.959                   | 0.642        |          |

**Conclusion**: This result indicated the formula can be developed for a transdermal drug delivery system.

Acknowledgement
The Universitas Muhammadiyah Prof. DR. HAMKA Research and
Development Institute has provided funding and assistance for this study.

#### References

Moghddam, S. R. M., Ahad, A. Aqil, M., Imam, S. S., & Sultana, Y. (2016). Formulation and optimization of niosomes for topical diacerein delivery using 3-factor, 3-level Box-Behnken design for the management of psoriasis. Materials Science and Engineering C, 69, 789–797. https://doi.org/10.1016/j.msec.2016.07.043

Negi, P., Aggarwal, M., Sharma, G., Rathore, C., Sharma, G., Singh, B., & Katare, O. P. (2017). Niosome-based hydrogel of resveratrol for topical applications: An effective therapy for pain related disorder(s). Biomedicine and Pharmacotherapy, 88, 480–487. https://doi.org/10.1016/j.biopha.2017.01.083

Rendon, A., & Schäkel, K. (2019). Psoriasis pathogenesis and treatment. International Journal of Molecular Sciences, 20(6), 1–28. https://doi.org/10.3390/ijms20061475

This research presented at MONASH INITIATE 2023 on October 25–26, 2023



# MONASH INITIATE 2023 PARTICIPANT GUIDE



MONASH PHARMACY



## Welcome

## Dear Participants,

We are honoured to invite you to join Monash INITIATE 2023, a physical conference to be held from Wednesday, 25 October to Thursday, 26 October 2023 at Monash University Malaysia. The theme of the conference this year is "Translating Research into Practice: Revolutionizing Healthcare Delivery and Outcomes", which is aimed to provide an opportunity for researchers to share their work and spark discussions that will further enhance the industry that we are in.

This conference covers a wide range of topics and areas of research, including drug discovery and delivery to public health, and many other aspects that will interest a wide scope of researchers from various backgrounds. With that being said, we have lined up speakers from around the world with experiences in biomedical and pharmaceutical research to provide talks that shall be fruitful to all.

We hope that Monash INITIATE 2023 will be impactful and meaningful to all participants and looking forward to seeing everyone there.



## **Key Dates**

## Registration Fees

## **APRIL, 2023**

**Registration Opens** 

- Registration
- Abstract Submission
- Young Researcher Award Nomination

https://bit.ly/MINIT2023\_Registration

## REGISTRATION FEES Malaysian Student : RM 300

Malaysian Participant : RM 490 Foreign Student : USD 75

Foreign Participant : USD 125

## **AUGUST, 2023**

Abstract Submission (by 25 September 2023)

Young Researcher Award Nomination (by 25 September 2023)

Presenter Registration (by 25 September 2023)

Audience Registration (by 25 September 2023)

## **OCTOBER, 2023**

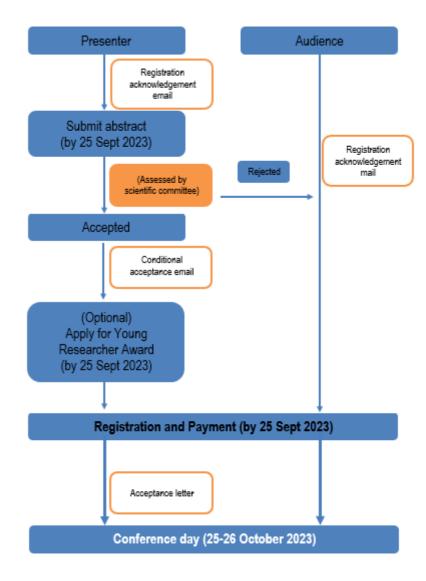
Conference Day: 25-26 October 2023

Post-Conference Workshop: 27 October 2023

Information for post-conference workshop will be available soon.



## Registration Flow





## **Topics**

This two-day conference with the following theme "Translating Research into Practice: Revolutionizing Healthcare Delivery and Outcomes" gives opportunities to researchers, academics, undergraduate and postgraduate students from Malaysia and around the world to communicate their research findings in, but not limited to, the following areas:

- Drug Discovery and Synthesis
- Drug Delivery
- Life Sciences (Cancer Biology, Microbiology, Neuroscience, Virology, Biochemistry, Molecular Biology, Medical Engineering)
- Clinical Pharmacy and Pharmacy Practice
- Digital Health and Big Data (Proteomics / Metabolomics, Pharmacogenetics)
- Public Health



## **Conference Information**





MONASH PHARMACY



## **MONASH INITIATE 2023**

Monash International Health Science and Technology Conference TRANSLATING RESEARCH INTO PRACTICE: REVOLUTIONIZING HEALTHCARE DELIVERY AND OUTCOMES

- Monash University Malaysia

This conference will be held at Monash University Malaysia for two days with an aim to provide a platform to researchers, academics and students globally to communicate their research findings

TOPIC

Drug Delivery

Engineering)

· Life Sciences (Cancer Biology,

Microbiology, Neuroscience, Virology, Biochemistry,

Molecular Biology, Medical

REGISTRATION FEES

#### KEYNOTE AND PLENARY SPEAKERS



Dr Daniel Wright University of Oxford, UK



Professor Chris Bain Monash University, Australia





Professor Datin Paduka Dr Khatijah Mohamad Yusoff National Institutes of technology Malaysia (NIBM)



Dr Janattul Ain Jamal Universiti Teknologi MARA (UiTM), Malaysia



University of Technology Sydney (UTS), Australia



Dr Daniel Malone Monash University, Australia



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For enquiries, please email to: pharmevents@monash.edu

PARTICIPANT GUIDE monashmalaysia.info/

initiate23guide

monashmalaysia.info/initiate23

MPS-CPD: 14 Credit Points | MMA-CPD: 16 Credit Points

35 STRAITS SCIENTIFIC



RSB-CPD: 42 Credits 2023 - Pharmacy (monash.edu.my)

· Drug Discovery and Synthesis · Digital Health and Big

Student : RM 300 (Local) / USD 75 (International)

REGISTRATION (by 10 October 2023) ABSTRACT & YRA (by 2 October 2023)

General participant : RM 490 (Local) / USD 125 (International)

· Clinical Pharmacy &

· Public Health

**Pharmacy Practice** 

#### POST CONFERENCE WORKSHOP

- ## 27 October 2023
- Monash University Malaysia

CORRELATION OF QUANTITATIVE AND QUALITATIVE RESEARCH TO ENHANCE **CANCER STUDIES OUTCOME** 

9.30am - 12.30pm (MYT)

COSMECEUTICAL: CONCEPTUAL EXPERIMENTAL DESIGN & EVALUATION ANALYSIS

2.30pm - 5.30pm (MYT)



## Program\*

| Time (MYT) | DAY 1 - 25 OCTOBER 2023, WEDNESDAY   |  |  |  |  |
|------------|--|--|--|--|--|
| 8.30am     | Registration and breakfast   |  |  |  |  |
| 9.00am     | Welcoming address  |  |  |  |  |
| 9.20am     | Track 1: Drug discovery and synthesis* / Keynote speaker 1                                   |  |  |  |  |
| 10.10am    | Track 1: Drug discovery and synthesis* / Keynote speaker 2                                   |  |  |  |  |
| 11.00am    | Tea break and poster viewing   |  |  |  |  |
| 11.20am    | Track 2: Drug delivery* / Keynote or plenary speaker 3                                       |  |  |  |  |
| 12.10pm    | Track 3: Life Sciences* / Keynote or plenary speaker 4                                       |  |  |  |  |
| 1.00pm     | Lunch and poster viewing   |  |  |  |  |
| 2.00pm     | Oral Presentation (Drug Discovery and Synthesis / Drug Delivery / Life Sciences)             |  |  |  |  |
| 3.40pm     | Tea break and poster viewing   |  |  |  |  |
| 4:00pm     | Poster presentation evaluation (Drug Discovery and Synthesis / Drug Delivery/ Life Sciences) |  |  |  |  |
|            | End of Day 1   |  |  |  |  |



# Program\*

| Time (MYT) | DAY 2 - 26 OCTOBER 2023, THURSDAY   |
|------------|---|
| 9.00am     | Registration and breakfast  |
| 9.20am     | Track 4: Digital Health* / Keynote or plenary speaker 5   |
| 10.10am    | Track 5: Clinical Pharmacy and Pharmacy Practice* / Keynote or plenary speaker 6                          |
| 11.00am    | Tea break and poster viewing  |
| 11.20am    | Track 5: Clinical Pharmacy and Pharmacy Practice* / Keynote or plenary speaker 7                          |
| 12.10am    | Track 6: Public Health* / Keynote or plenary speaker 8  |
| 1.00pm     | Lunch, lunch talks and poster viewing   |
| 2.00pm     | Oral Presentation (Digital Health / Clinical Pharmacy and Pharmacy Practice / Public Health)              |
| 3.40pm     | Tea break and poster viewing  |
| 4.00pm     | Poster presentation evaluation (Digital Health / Clinical Pharmacy and Pharmacy Practice / Public Health) |
| 5.00pm     | Awards Presentation   |
|            | End of Day 2  |



# Abstract Submission Guidelines

Title of paper (Font Arial 12; Boldfaced; Title case; Centre)

Authors<sup>1,2</sup> (Font Arial 11; Name; Underlined presenting author; Centred)

1,2 Affiliations (Font Arial 10; Italicised; Centred)

Correspondence: : Name and email address (Font Arial 10; Italicised; Centred)

Abstract: (Font Arial size 11; Maximum words 300; 1.5 Line spacing)

**Keywords: (Font Arial size 11; 3 to 5 words)** 

## **Abstract Formatting Guidelines**

- The abstract should follow the given template (link: https://bit.ly/MINIT2023\_abstract\_temp) and in Microsoft word format.
- 2. The major aspects of the entire abstract in a prescribed sequence with the **title** which includes:
  - <u>Introduction/Background</u>: This should include the overall purpose of the study and the research problem(s)
  - Methods: The basic design of the study / methodology
  - Results: Results / major findings of your investigation
  - <u>Discussion and conclusion</u>
- 3. The abstract should not exceed 1 page in length and file size should not be more than 5MB.
- 4. All text must be Arial in specified font points.
- 5. Upload your abstract into <a href="https://bit.ly/MINIT2023 Registration">https://bit.ly/MINIT2023 Registration</a> by 25 September 2023.



## Young Researcher Award

- This award is for junior scientists, including PhD and postdoctoral fellows having a research background with a maximum of 3 years of post-PhD experience. A senior scientist will not be considered.
- 2. To be qualified for this award, the nominee must have at least one published research paper where he/she is the first author.
- 3. All nominees must submit their research findings in the form of an abstract in order to be selected for the Young Researcher Award at Monash INITIATE conference 2023 on 25-26 October 2023.
- Nominee need to submit his/her recent curriculum vitae (CV) and a reference letter saved as a <u>single</u> pdf file (file name: MONASH INITIATE 2023 YRA\_APPLICANT NAME.pdf).

This file is to be uploaded to: <a href="https://bit.ly/MINIT2023\_Registration">https://bit.ly/MINIT2023\_Registration</a>

5. Young Researcher Award winner will be required to submit a video portfolio.

#### Note:

The Monash INITIATE 2022 Young Researcher Award Winner will be notified and listed before 1 October 2023.

Monash University reserves the right not to declare any Young Researcher Award winner if there are no suitable candidates found in any given year.



# Oral Presentation Guidelines

## 1. Presentation Style

We recommend using 15-25 slides for presentation content. You are welcomed to use any innovative presentation style as long as you adhere to the timing of a maximum of 10 minutes. After presenting, each speaker will be allocated 5 minutes for Q&A. Marks will be deducted if the presenter exceeds the given time limit

#### 2. Slides Deck

Please save your slides in powerpoint format into a pendrive and bring it with you on event day. Your presentation will be presented using the slides you saved in your pendrive. Presenters will be given a remote control to navigate the slides (PPT) during their session.

#### 3. Slides Criteria

- The presentation slides must be in English.
- Text size must be readable (minimum font size 14 pt).
- Please insert slide number.
- The title page of your slides should follow this <u>template</u> design. The rest of the slides background can be designed creatively as you wish.
- Template: https://bit.ly/OP2023\_slides\_template
- All information submitted is the sole responsibility of the author(s). Please note that the review committee will not be held accountable for technical or grammatical errors.



# Oral Presenters Guidelines

- On the day of the oral presentation, presenters are expected to arrive 15 minutes before the oral presentation session to do a quick run-through. The presentation slides should be saved on a USB drive which will be used during the session.
- 2. Oral Presenters are required to share the slides on the screen during the Oral Presentation session. A remote control will be given to the presenter to navigate the slides (PPT) during their session.
- 3. Each Presenter will have a maximum of 10 minutes for the presentation, and followed by a 5-minute Q&A session. The Presenter will be notified at the 8th minute. The Presenter can continue with the speech, but is encouraged to be ready to end the presentation.
- 4. The Presenter will once again be notified when the time is up, i.e at the 10th minute. The presentation will be stopped. We will move on to the Q&A session.
- 5. During the Q&A session, the Judges and audiences may ask questions directly to the Presenter and the Presenter can respond accordingly.
- Presenters who did not turn up at their assigned presentation slot will be called again before the end of the Presentation Session. Presenters who did not turn up after the last call will not be considered for the evaluation and award.
- 7. Judges' decision is final and irrevocable.
- 8. Should you have any queries during the session, please feel free to contact the conference committee members at pharmevents@monash.edu.



## **Evaluation** criteria

Participants will be evaluated according to the following criteria:

- 1. Understanding of Scientific Content
- 2. Integration of Knowledge
- 3. Organization and Clarity
- 4. Style and Delivery
- 5. Use of Visual Aids (graphs or tables) in the Presentation
- 6. Ability to Answer Questions



# Poster Presentation Guidelines

### 1. Formatting requirements

General formatting requirements include:

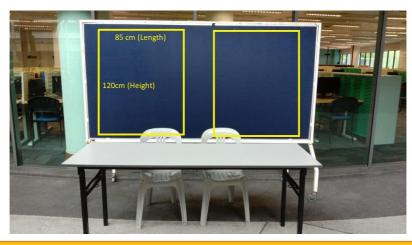
Orientation : Portrait / Landscape

Portrait size : Height 120 cm X Length 85 cm (as shown below)

Number of slide : Each poster must fit into **ONE** page only

Poster must be in English

- Please make sure to include all details for the Header, i.e.: Abstract ID, Title, Authors, Affiliations, Corresponding email.
- Please <u>underline</u> and **bold** the presenting author. Emails and address information are recommended in case viewers are interested in contacting you for more information. Please underline the name of the presenting author
- Prepare all diagrams and paragraphs neatly and readable.
- Please ensure that the poster is clear and the text is easy to read.
- Map pins will be prepared for the participants to pin the poster on the presentation board.
- All information submitted is the sole responsibility of the author(s). Please note that the review committee will not be held accountable for technical or grammatical mistakes.





# Poster Presenters Guidelines

- 1. In order to ensure participants have a smooth experience for the conference, all participants are required to print their own posters in the formats mentioned above.
- 2. Poster presentation sessions will be conducted throughout the conference during the pre-assigned break times.
- 3. Each Presenter is required to stand-by their posters to present their posters to the judges and any audience during the evaluation session.
- 4. Any participants during the length of the conference may ask questions to the poster presenters at anytime during the conference.
- 5. Presenters who did not showcase the hard copy of the poster will not be considered for the evaluation and award.
- 6. Judges' decision is final and irrevocable.
- 7. Should you have any queries during the session, please feel free to contact the committee members.



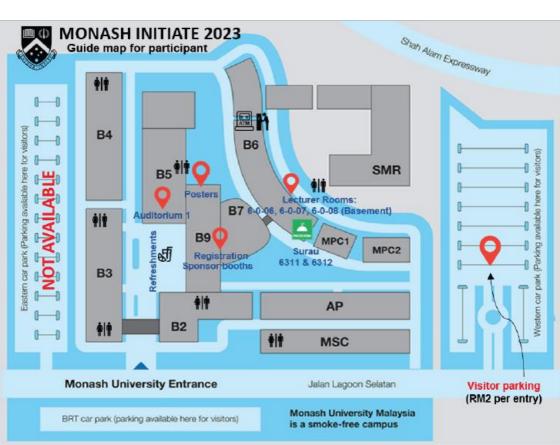
## **Evaluation** criteria

Participants will be evaluated according to the following criteria:

- 1. Understanding of Scientific Content
- 2. Integration of Knowledge
- 3. Poster Organization
- 4. Poster Appearance and Clarity
- 5. Narrative Explanation
- 6. Ability to Answer Questions



## Guide map



#### **Building index**

#### Building 2 (B2)

Social Sciences

odemal Relations, Development and Alumni

General Studies

International Student Support Marketing & Media Plenary Theatre Scholarships and Study Loans

#### Building 3 (B3)

frey Cheah School of fedicine and Health S

#### Building 4 (B4)

Teaching and Research Labs Plant House

### Building 5 (B5)

Engineering Laboratories

## Building 6 (B6)

Facilities Management (Mail Room) MPC 1 & MPC 2

## **Building 7 (B7)**

Bookshop Monash University English Language Centre

#### Building 9 (B9) Computer Laborat

(Monash Sports Centre) Monash University Student

(Emergency Assembly Point)

## (Sunway Monash Residence)



## FAQ

### When do I make my payment?

For Presenters, please bank-in your payment once you have receive your Conditional Acceptance email.

For Audience participants, please bank-in your fees upon your registration to confirm your attendance.

Please email the bank in slip to pharmevents@monash.edu for confirmation and receipt.

## If I wish to cancel my registration after I made the payment, will I receive a refund?

No refund will be made.

No refund will be made for unattended presenters or audiences.

### What if I can't attend the entire two days conference?

In an event where a participant is unable to attend for both days, the participant may choose to join the event whenever they can. However, it is compulsory to be present during your presentation session as you will be disqualified if absent.

### What is covered by the registration fee?

Access to Monash conference hall, exhibition booths and meals (lunch and 2 tea breaks) during the event for the entire two-day conference.

Can I submit the same abstract for both oral and poster presentations?

No. Participants may only use one abstract for either oral or poster presentations.

## May I present my research together with another associate?

A presentation may be presented by two presenters so as long as both presenters have registered and paid.

### Who do I contact with questions?

If you have any questions, please email to <u>pharmevents@monash.edu</u>. Our team will get back to you as soon as possible.



## Travel details

## Accommodation

For your accommodation needs, we are more than happy to suggest some of the hotels nearby Monash University Malaysia

Sunway Pyramid Hotel

https://www.sunwayhotels.com/sunway-pyramid/

Sunway Resort and Spa

https://www.sunwayhotels.com/sunway-resort

Sunway Clio Hotel

https://www.sunwayhotels.com/sunway-clio

Raintree Resort Suite

https://www.resortsuites.com.my/en/



## Travel details

## Transportation

You may easily travel to our campus via e-hailing services such as Grab.

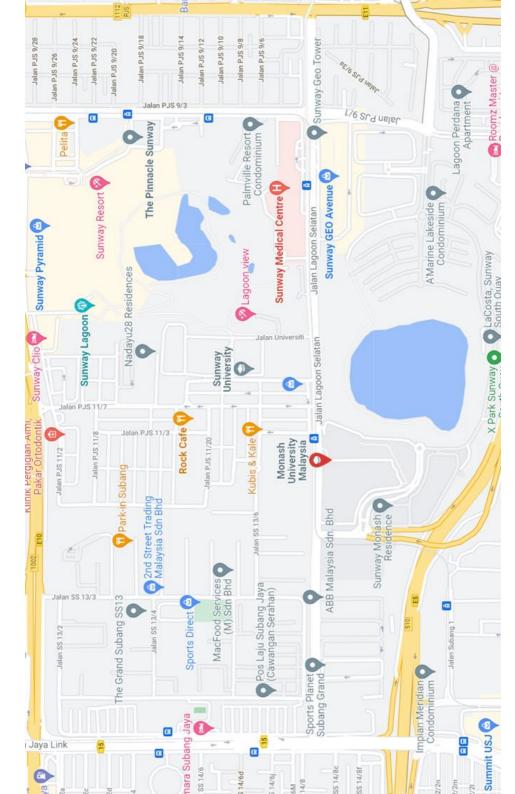
Alternatively, you may use the bus rapid transit (BRT) and get off at BRT Sunway Depot which is directly opposite our campus.

Light rail transit users may also reach our campus by alighting at and boarding the BRT at Sunway Medical Centre station.

Participants travelling by car may use Waze GPS Support to guide you to our campus: <a href="https://waze.com/ul/hw281rvzw9">https://waze.com/ul/hw281rvzw9</a>

An interactive map of our campus

https://g.page/monashmalaysiaofficial?share





## Travel details

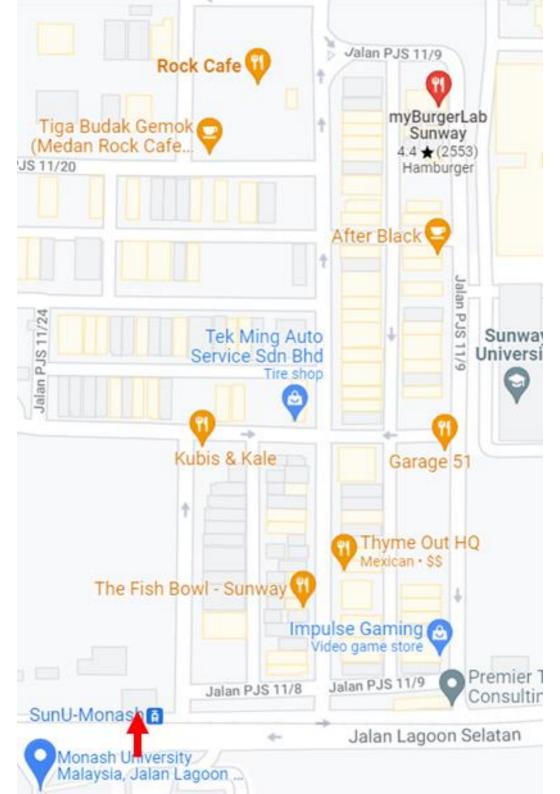
## **Eateries**

Being in Monash also means having many choices for food and drinks no matter what you're in the mood for. Here's a list of what you can find nearby our campus:

myBurgerlab
The Fish Bowl
Kubis and Kale
Thyme Out
Chatto Tea & Coffee
Garlic Roasted Chicken Rice Shop

If you feel you need more choices: Rock cafe

Please exercise precautions travelling across the roads outside the Campus. Please use the pedestrian bridge (marked as the red arrow) to cross the main road.





## **Contacts**

Enquiries: pharmevents@monash.edu

Associate Professor Mahendran Sekar: Mahendran.Sekar@monash.edu

Mr Edmund Tow: Wai.Tow@monash.edu

