The effects of EM1 on LPS Activated Microglia
Abdallah Jwayyed, Pallavi Shrivastava, Ifechukwude Biose
Cardiovascular Center of Excellence, LSU Health Sci. Center, New Orleans, LA

Introduction

- Gut dysbiosis defines the imbalance between health promoting and pathogenic bacteria as observed in obesity.
- Gut dysbiosis results in “leaky gut”, allowing bacteria and its endotoxins into bloodstream.
- Lipopolysaccharide (LPS) is the main endotoxin of Gram-negative bacteria increased in blood due to gut dysbiosis.
- In the brain, LPS activates microglia and transforms it from anti-inflammatory to pro-inflammatory state.
- Exercise has been linked to improved gut health and decreased pro-inflammatory state.
- We tested whether a novel exercise metabolite (EM1) shown to decrease appetite in obese mice will decrease pro-inflammatory in cultured microglia.

Hypothesis: EM1 will decrease the expression of pro-inflammation in LPS-activated microglia.

Method

- Fig. 1 Cell viability assay: EM1 1 µM decreased the number of dead cells.

Results

- IBA1+MHC II: EM1 (0.1 µM) increased pro-inflammatory microglia.
- IBA1+CD206: EM1 (0.1 µM) increased anti-inflammatory microglia.

Conclusion and Next Step

- EM1 (0.1 and 1 µM) significantly decreased the number of dead cells treated with LPS.
- Low dose EM1 (0.1 µM) significantly increased both anti- and pro-inflammatory microglia.
- High dose EM1 (1 µM) significantly decreased pro-inflammatory microglia.
- EM1 at 0.1 µM is ambivalent for anti- and pro-inflammatory microglia population.

Next Logical Steps:
- To determine the effect of EM1 on inflammatory states of microglia in obese mice.