

# Synthetic Cannabinoids as a Host-Targeting Approach to Reduce Inflammation and Clear Intracellular Infection

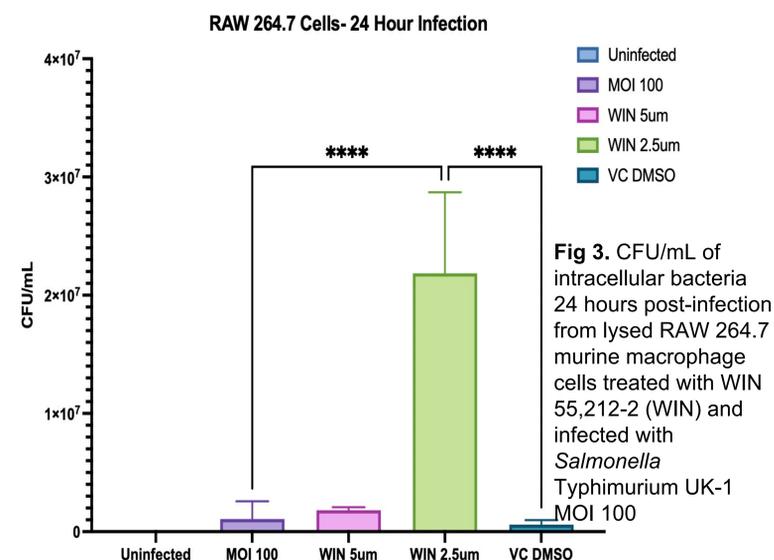
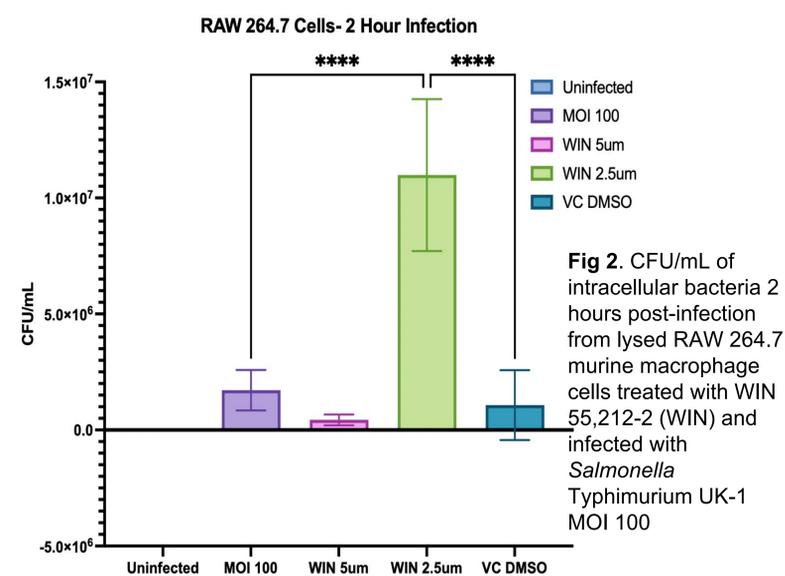
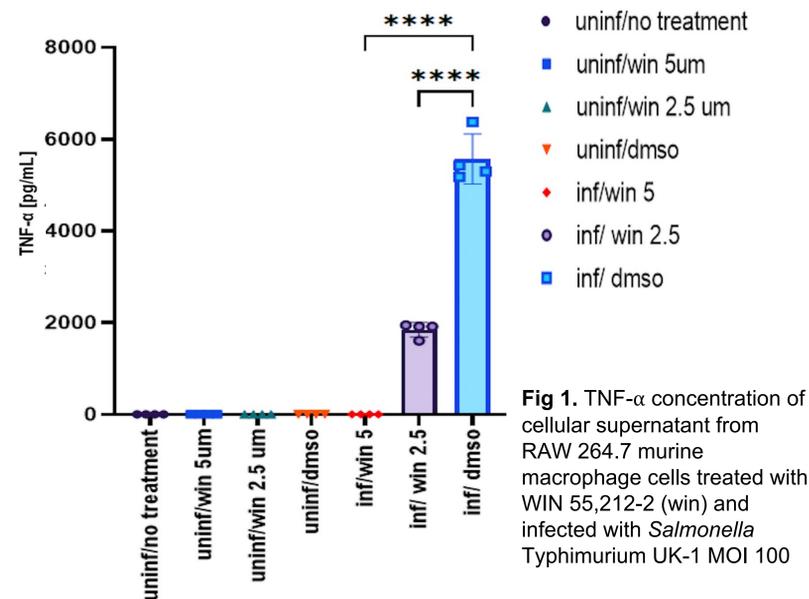
## Introduction

- *Salmonella* Typhimurium is a gram-negative intracellular bacteria that causes foodborne illness, characterized by robust inflammation of the gastrointestinal tract
- Cannabinoids are natural or synthetic compounds that interact with the endocannabinoid system
- Cannabinoids recognize the CB2 receptor as the peripheral receptor, primarily found on immune cells
- WIN55212-2 mesylate (WIN) has a high affinity at CB2 receptor and is considered a full agonist
- *Salmonella* infects host macrophages and elicits an immune response
- *Salmonella* affects the host endocannabinoid (eCB) metabolism involved in the cell's anti-inflammatory status
- Upon the highly proinflammatory infection with *Salmonella* that causes damage to the epithelial cells of the small intestine, there is a critical need for the host macrophage to shift from an M1 phenotype to M2
- M2 phenotype is associated with resolving inflammation and improvement in tissue healing
- The objectives of this project is to determine if synthetic CBs can modify innate immune responses directed against *Salmonella* and help maintain homeostasis during this highly inflammatory infection

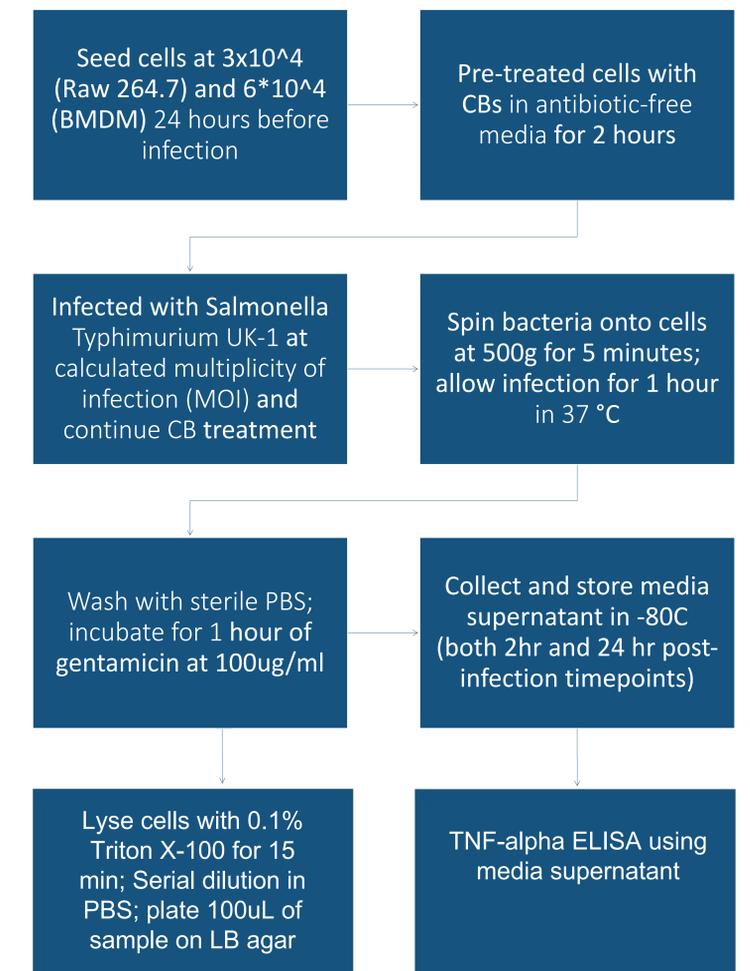


Image 1. *Salmonella typhimurium* bacteria (2)

## Results



## Methodology



## Conclusions and Future Directions

During *Salmonella* infection, eCBs and synthetic cannabinoids (CBs) prime macrophages towards a more phagocytic and less inflammatory M2 phenotype. By analyzing TNF-alpha concentrations, we revealed that WIN55,212-2 can completely block proinflammatory responses. Additionally, we evaluated the effect of CBs on bacterial clearance, where WIN55,212-2 was shown to increase bacterial clearance. Overall, our results suggest that CBs can be used to decrease inflammation and promote host pro-phagocytic functions during *Salmonella* infection. Future experiments will include in vivo studies to analyze CBs potential as a host-directed therapy against *Salmonella* Typhimurium infection.

## Acknowledgments

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