



The Medicinal Properties of Irish Honey

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Introduction

Manuka honey is an internationally recognized honey licensed as a medicinal product for wounds¹. Medicinal honeys are often used in hospitals for partial thickness burns² to surgical wounds and in veterinary clinics for surgical and traumatic wounds³. Outside of the osmotic action and acidic environment of any honey a number of other components contribute to their medicinal properties. These components vary depending on the floral origin of the honey⁴. A preliminary sign that a honey is medicinally active is the total phenolic content (TPC) which correlates with the honeys potential antioxidant and antimicrobial activity. Many honeys have exhibited immunomodulatory effects where stimulation or inhibition of pro-inflammatory components (TNF- α , IL-1 β , NF- κ B, and IL-6) as well as anti-inflammatory components (IL-10, TGF- β , and VEGF) is observed after exposure. Because of their immunomodulatory and antioxidant properties honeys can be used for chronic wounds arrested in the inflammatory phase due to high reactive oxygen species (ROS) levels, poor circulation (diabetes), and infections⁵.

A study by Kavanagh S., *et al.* in 2019 detected TPC values comparable to manuka honey in Irish heather honey, as well as reporting higher than average TPC values for Irish ivy honey⁶. As the medicinal properties of a honey variety is relative to its floral origin and TPC it is important to further study the potential of these two Irish honeys relative to their applicability as wound healing agents.

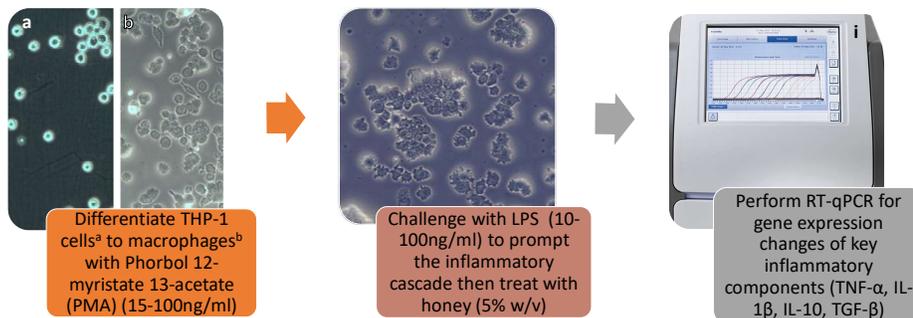
Aims and Objectives

The aim of this research is to investigate the immunomodulatory, antioxidant, and antimicrobial properties of Irish ivy and heather honey to determine potential for use as wound healing agents.

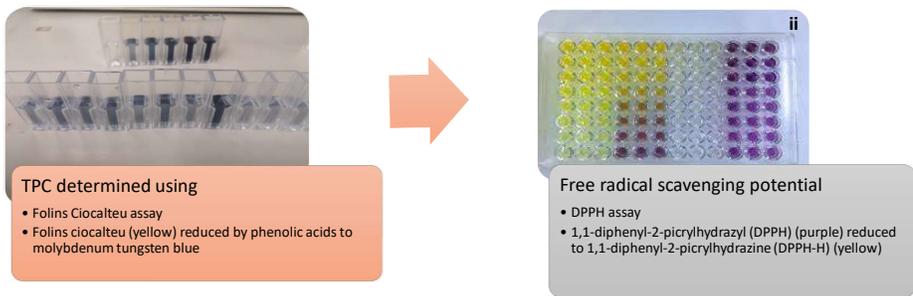
1. Assess the immunomodulatory properties of ivy and heather honey with RT-qPCR using the THP-1 (monocytic) cell line
2. Assess the radical scavenging ability of ivy and heather honey
3. Assess the MIC of heather and ivy honey against key wound pathogens.
4. Incorporate these honeys into suitable hydrogels for topical use
5. Assess the activity of the honey-hydrogel prototype

Methods

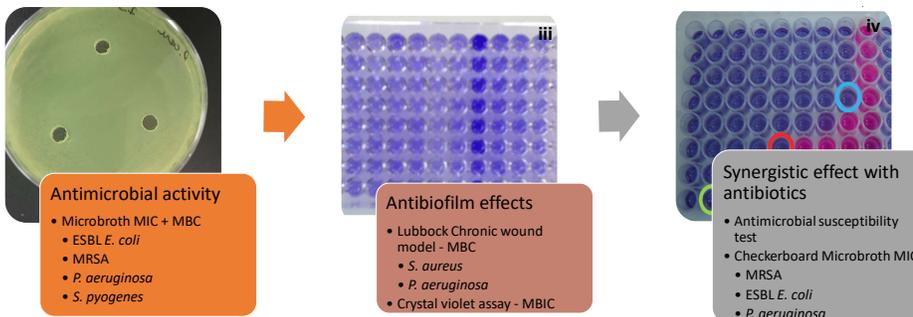
1. Immunomodulatory assay



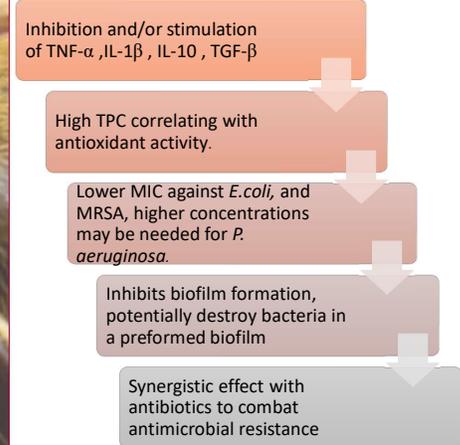
2. Antioxidant assays



3. Antimicrobial assays



Expected Results



Conclusion/Future Work

Following thorough investigation of the medicinal properties of these honeys; gene expression analysis on key wound components, inhibitory effects on key wound pathogens including biofilms, and antioxidant potential, further work will commence.

Incorporating the honeys into a hydrogel prototype (PEGDMA/PVCL/Chitosan) and confirming medicinal activities will be the next phase. The project will culminate in the development of a prototype topical wound gel with potential for use in hospitals and veterinary clinics.

Acknowledgments

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Federation of Irish Beekeepers (FIBKA)

Irish Beekeeping Association (IBA)

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