IOCPS 2025 Conference

The 3rd International Online Conference on Polymer Science

19–21 November 2025 | Online

MDPI

Development of Non-Antibiotic-based Formulations and Materials for the Treatment of recurrent vaginal infections

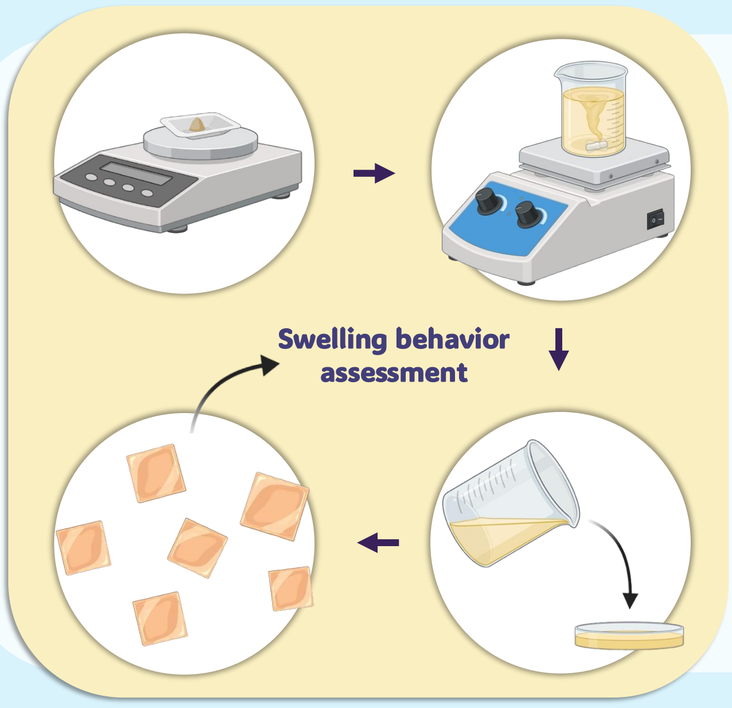
Fatima Yahya Zabara, Amal AbdulHakeem Abdulla, Farah Suhail Alhasan, Noor Ali Mahdi, Roshan Deen G*, Uwe Torsten

Materials for Medicine Research Group, School of Medicine, Royal College of Surgeons in Ireland, Medical University of Bahrain, Kingdom of Bahrain

INTRODUCTION & AIM

Vaginal infections are a widespread global health issue among women, often leading to discomfort, pain, and dysuria . Despite the availability of treatments, these infections frequently recur or persist . This study investigates a novel therapeutic approach using bioactive films composed of curcumin and Myrtus communis plant to manage recurrent vaginal infections . The primary aim is to identify a natural solution that avoids antibiotics, thus addressing concerns related to antibiotic resistance and the side effects commonly associated with conventional treatments. (1)

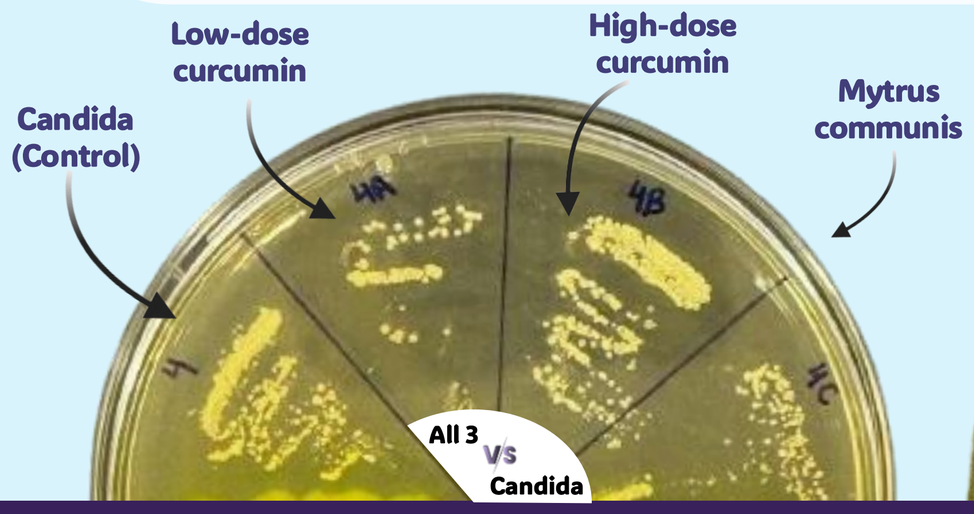
METHOD



Films were formulated with 2% sodium alginate and 10% polyvinyl alcohol (PVA), each embedded with either pure curcumin or Myrtus communis (2) extract to evaluate their individual effects on performance. The swelling properties of each type of film were measured using standardized 1×1 cm samples, offering an accurate assessment of their moisture absorption capacity, which is essential for effective functionality in a vaginal environment.

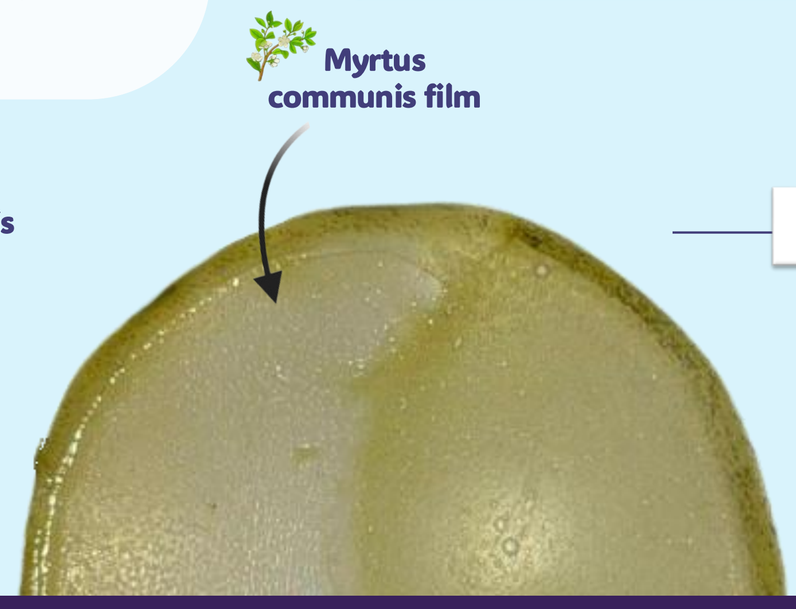
PRELIMINARY RESULTS

Both varieties of circular film samples displayed swelling characteristics; notably, the curcumin-infused films exhibited greater swelling ability than the Myrtus communis films. This distinction could improve moisture retention, which is advantageous for ensuring extended interaction with the mucosal surface . We conducted a bacterial culture study focused on a specific pathogen commonly associated with recurrent vaginal infections . Utilizing the resources available , we tested curcumin samples at two different concentrations alongside Myrtus communis against Candida albicans. The results demonstrated promising potential, as illustrated in our findings.



CONCLUSION & FUTURE WORK

The curcumin-based films exhibited promising swelling characteristics, indicating potential for enhanced mucosal adherence and drug delivery in the vaginal environment. The Myrtus communis showed the highest effectiveness against bacterial strains, even at minimal concentrations utilizing only the extract. Ongoing research aims to further improve the swelling properties of Myrtus communis films and assess the antimicrobial efficacy of both formulations . By trying to control the consistency of the gel to optimize its performance against bacteria and fungi, we hope to test these formulations against a broader range of bacteria responsible for vaginal infections .



References:

1. Nicolle LE. Vaginal infections. Can Fam Physician. 1989;35:1323–6.
2. Khalilzadeh S, Eftekhar T, Rahimi R, Mehriardestani M, Tabarrai M. An evidence-based review of medicinal plants used for the treatment of vaginitis by Avicenna in “the Canon of medicine.” Galen [Internet]. 2019;8:e1270. Available from: http://dx.doi.org/10.31661/gmj.v8i0.1270