11th يوم البحث العلمي بكلية الصيدلة College of Pharmacy Research Day

جامعة الملك سعود King Saud University

In-Vitro Release and Antibacterial Activity Evaluation of Luteolin Gel-Based Formulation

Raghad A. Alsaja[1] ,Raghad B. Alammari[1] ,Sarah I. Bukhari[1] , Doaa H. Alshora[1]
[1]Department of Pharmaceutics, College of Pharmacy, King Saud University, Riyadh, KSA

INTRODUCTION

Luteolin (LUT) is a yellow crystalline flavonoid that existed naturally with potential anticancer, anti-allergic anti-inflammatory and antibacterial effects that excreted by multiple actions. It's insoluble in water with lipophilic nature that makes it ideal for topical delivery. Additionally, topical gel formulation provides a suitable delivery system of luteolin because it is an elegant non-greasy formulation.

OBJECTIVES

- Determine the antibacterial effect against MRSA strains (ATCC 3345,ATCC 4745,ATCC 35501) and *S. aureus* (ATCC 25923).
- Formulation of LUT topical hydrophilic gel and the optimized formula.
- Studying the effects of different types and concentrations of penetration enhancers on the release of the LUT using 3^3 Box-Behnken design.

METHODS

Antibacterial activity

Agar well diffusion method

Gel preparation

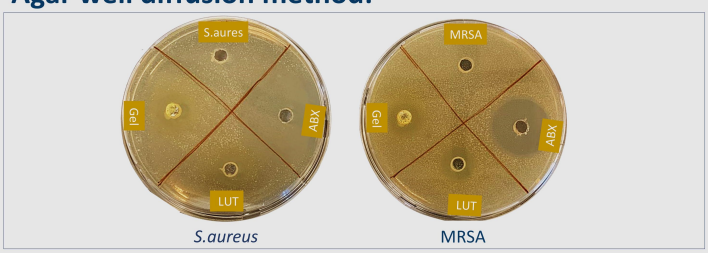
- LUT gel was prepared by using carbopol 943 (1%). The effect of different types and concentrations of penetration enhancers on LUT release.
- The effect of 3 independent parameters including: propylene glycol (PG, 0-5%); Oleic acid (OA, 0-4%); Tween 80 (0-5%) was studied using 3^3 box Behnken design.
- The impact of these factors was studied by characterizing the:

LUT content → LUT release → PH

Viscosity → Clarity → Homogeneity

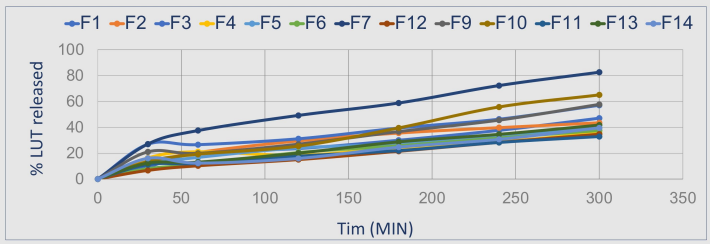
RESULTS

- **Agar well diffusion method:**

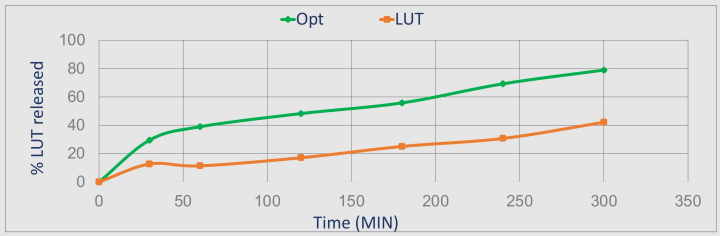


S.aureus MRSA

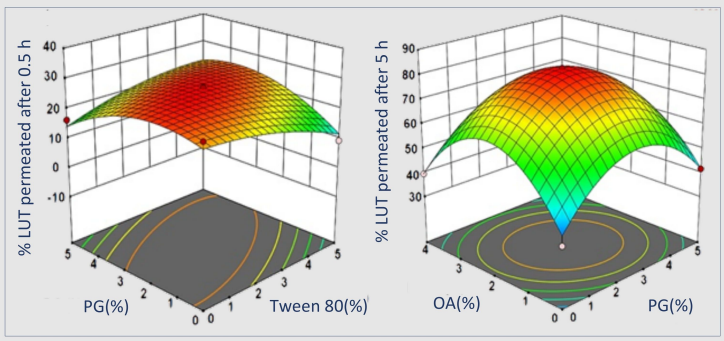
- **Dissolution profile of different formulations of LUT gel :**



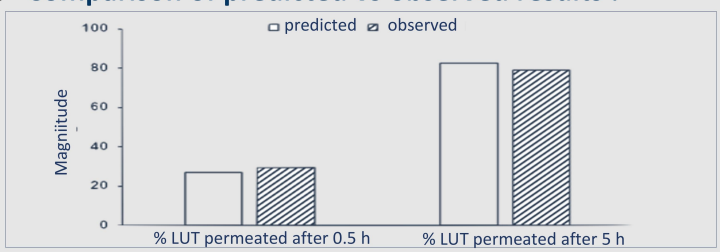
- **Dissolution profile of optimized formula :**



- **3D response figures :**



- **Comparison of predicted vs observed results :**



- **ANOVA Analysis effect of the 3 independent factors :**

Source	p-value	
	% Released after 0.5 h	% Released after 5 h
A-PG	0.6285	0.6613
B-OA	0.6390	0.3025
C-Tween 80	0.5099	0.0218
AB	0.1726	0.3476
AC	0.0143	0.0140
BC	0.8469	0.0088
A^2	0.0085	0.0003
B^2	0.0007	0.0001
C^2	0.1417	0.0021

CONCLUSION

Formulation of LUT as gel could be a promising and effective dosage form for treatment of skin infections caused by MRSA and and *S. aureus* strains as well as wound healing.

REFERENCES

Poster code :045