

Special populations

Marwa A. Sallam

CRS 2022 Annual Meeting & Expo

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

Advanced Delivery Science



Lactoferrin Nanoconjugates For Topical Attenuation of Psoriasis

Marwa A. Sallam, PhD

Ass. Prof of pharmaceutical technology, Faculty of pharmacy,

Alexandria University

Egypt

CRS 2022 Annual Meeting & Expo

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

Advanced Delivery Science



Psoriasis

Pain

Loss of self confidence



Erythema

Risk of skin cancer

Risk of skin cancer

1-3% of adults populations
Public health concern!

**Systemic treatment
immunosuppressives &
anti-inflammatory**

- ❑ limited amount reaching skin
- ❑ Off target side effects due to distribution in body organs

Unsatisfactory clinical outcomes

**Marketed topical treatments
as creams, gels..etc,**

- ❑ Poor skin penetration (frequent application)
- ❑ Local side effects :dryness, skin thinning, delayed wound healing, fungal infections hypopigmentation.
- ❑ Inconsistent patient adherence & discontinuation of successful treatment

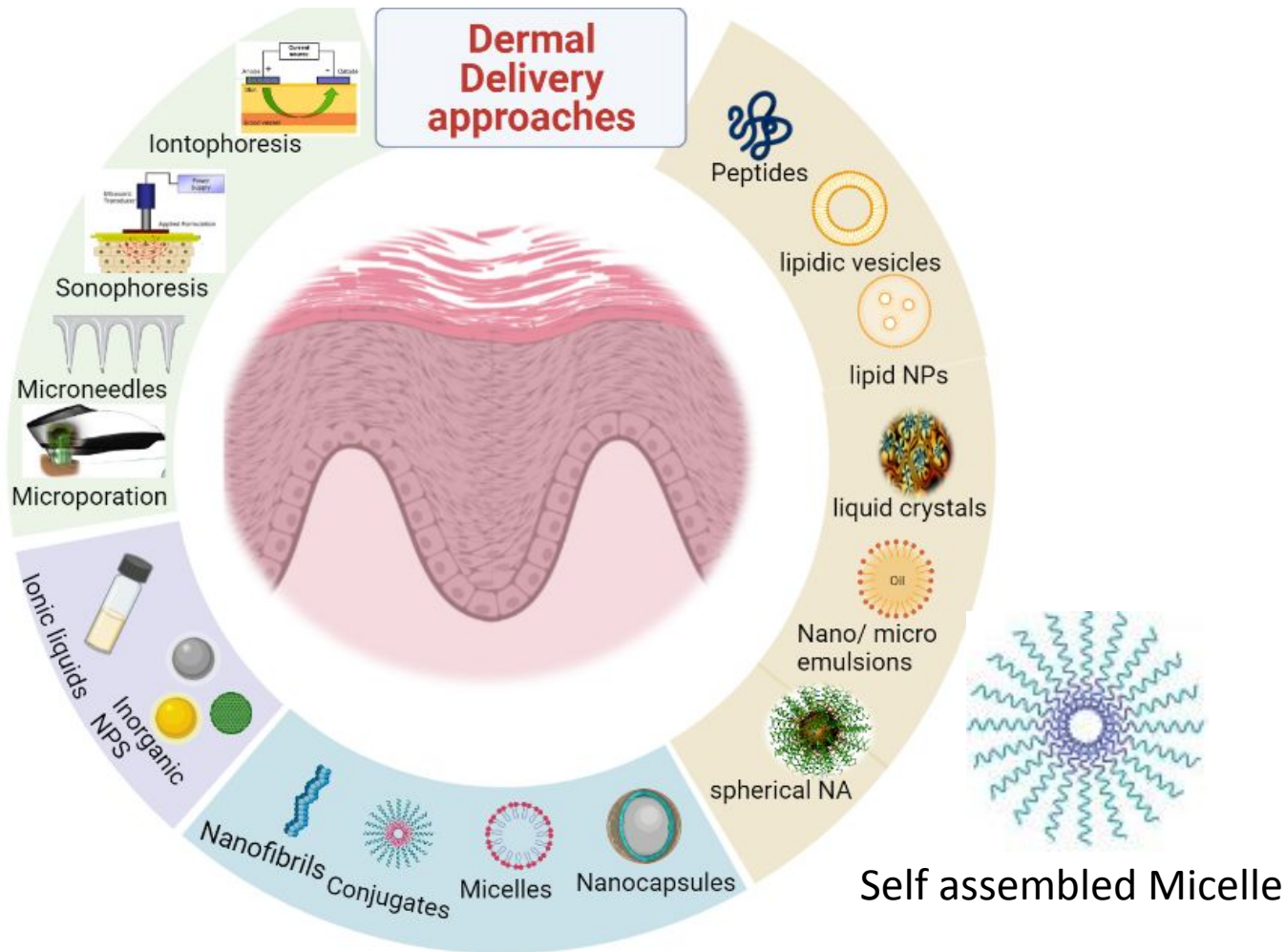


CRS 2022 Annual Meeting & Expo

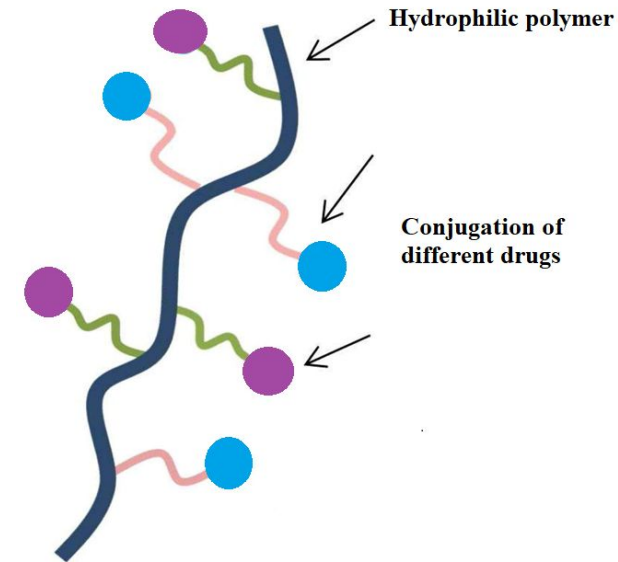
Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

Nanomedicines overcoming challenges for dermal delivery



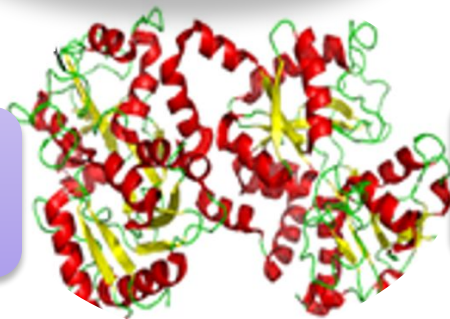
Polymer Drug conjugate



We aim to prepare rationally designed polymer conjugates using natural bioactive ingredients that possess immunomodulatory activity.

Dietary products for PDC

Lactoferrin



Mucosal epithelial cells
Biological fluids

functional groups allow
its chemical conjugation

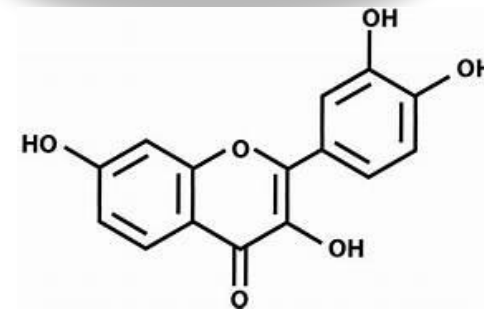
Immunomodulatory
anti-inflammatory, anticancer
Skin disease
Acne, Psoriasis



Methotrexate

Synergistic anti-inflammatory
activity, improve its skin delivery

Fisetin



Mango



Apple



Grapes



Strawberries



Onion



Cucumber

Polyphenolic flavonoid (pigmented fruits)
Anti-inflammatory, antioxidant & anti-cancer effects

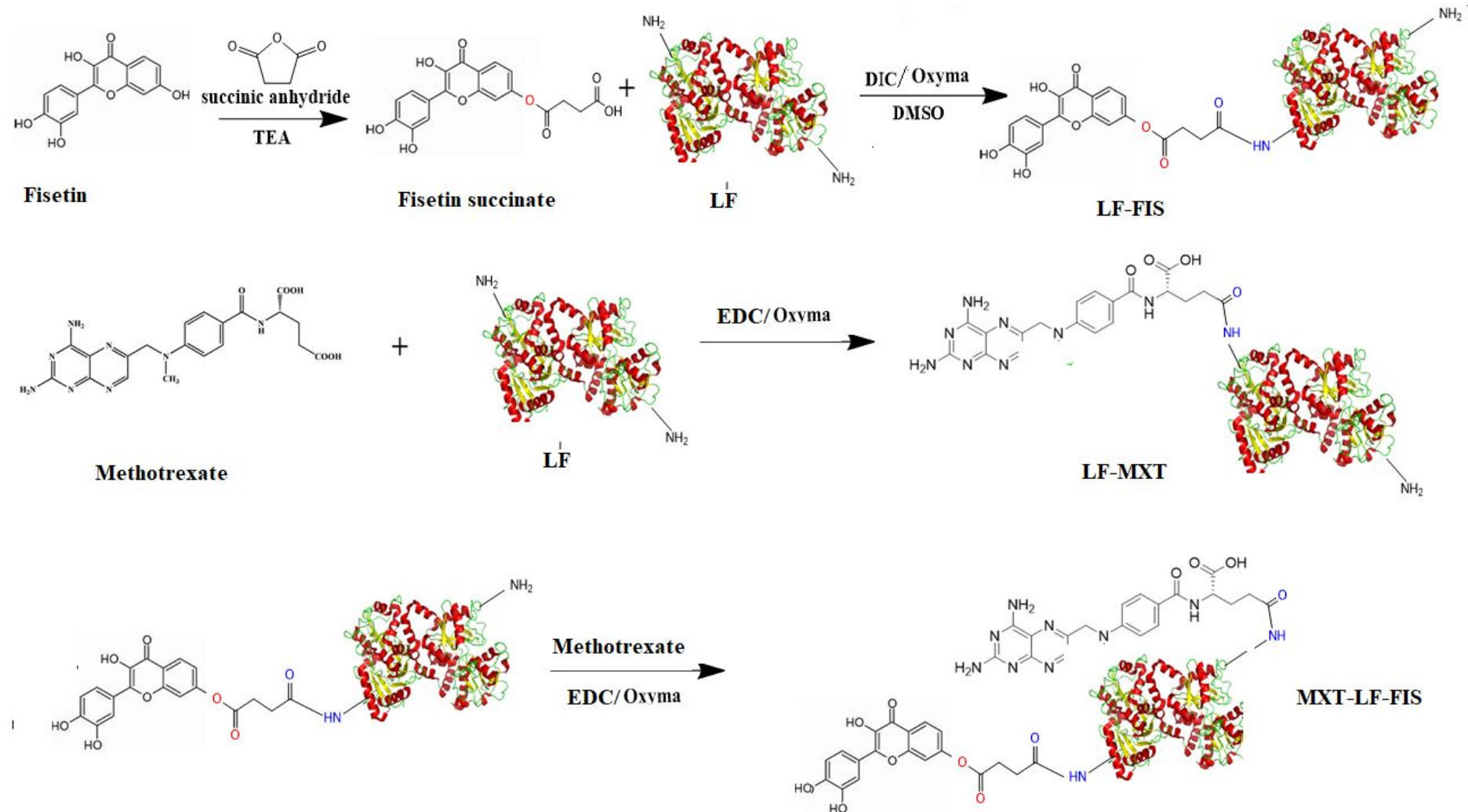


CRS 2022 Annual Meeting & Expo

Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

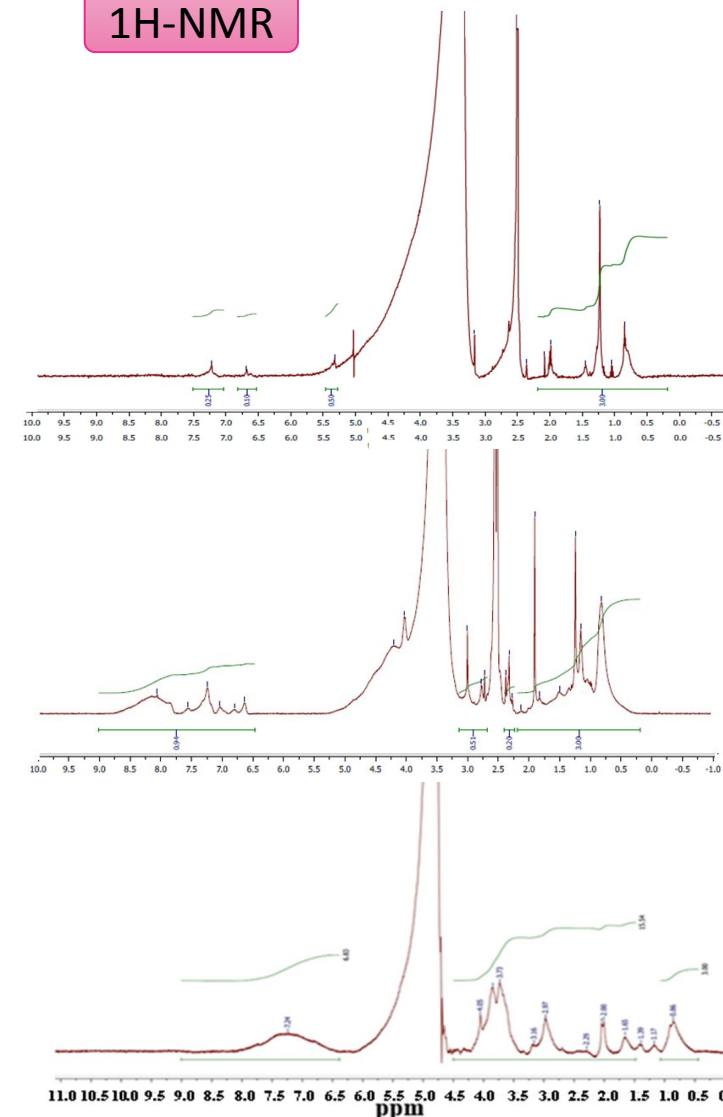
Synthesis & characterization of MXT-LF-FIS conjugates



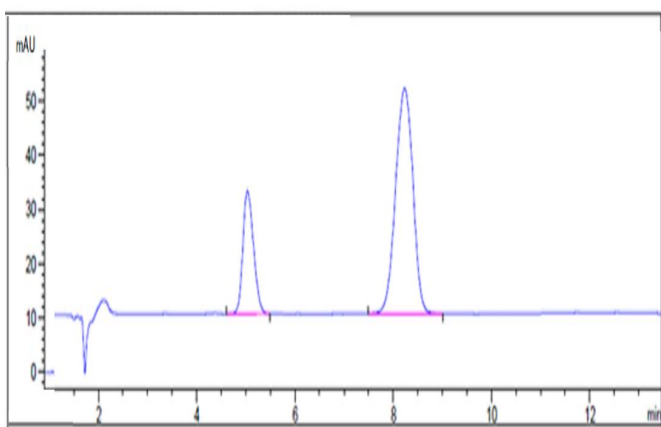
Conjugates characterization

Conjugate	Drug Content (w/w)	Particle size (nm)	Zeta potential
LF-FIS	5.83%	126.2 ± 2.3	+16.3 ± 2.1
LF-MXT	5.03%	130.2 ± 5.7	+19.4 ± 3.2
MXT-LF-FIS	4.75% MXT, 5.56% FIS	164.3 ± 3.1	+13.5 ± 1.5

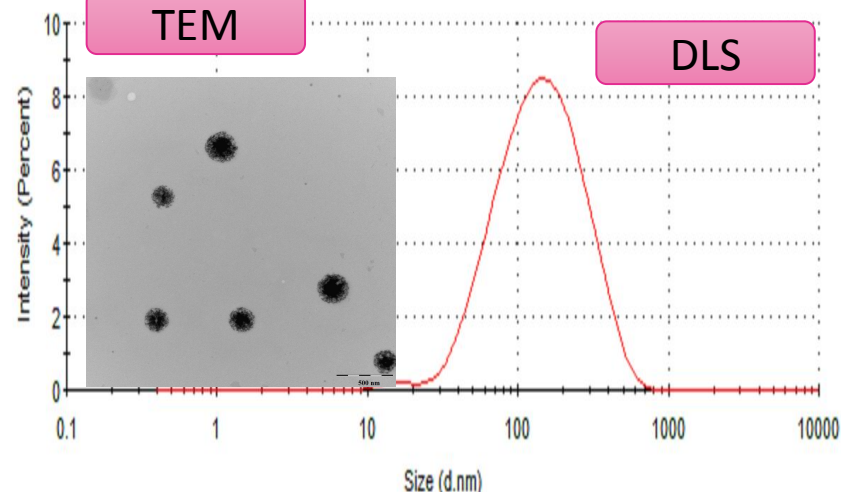
¹H-NMR



HPLC



TEM



DLS

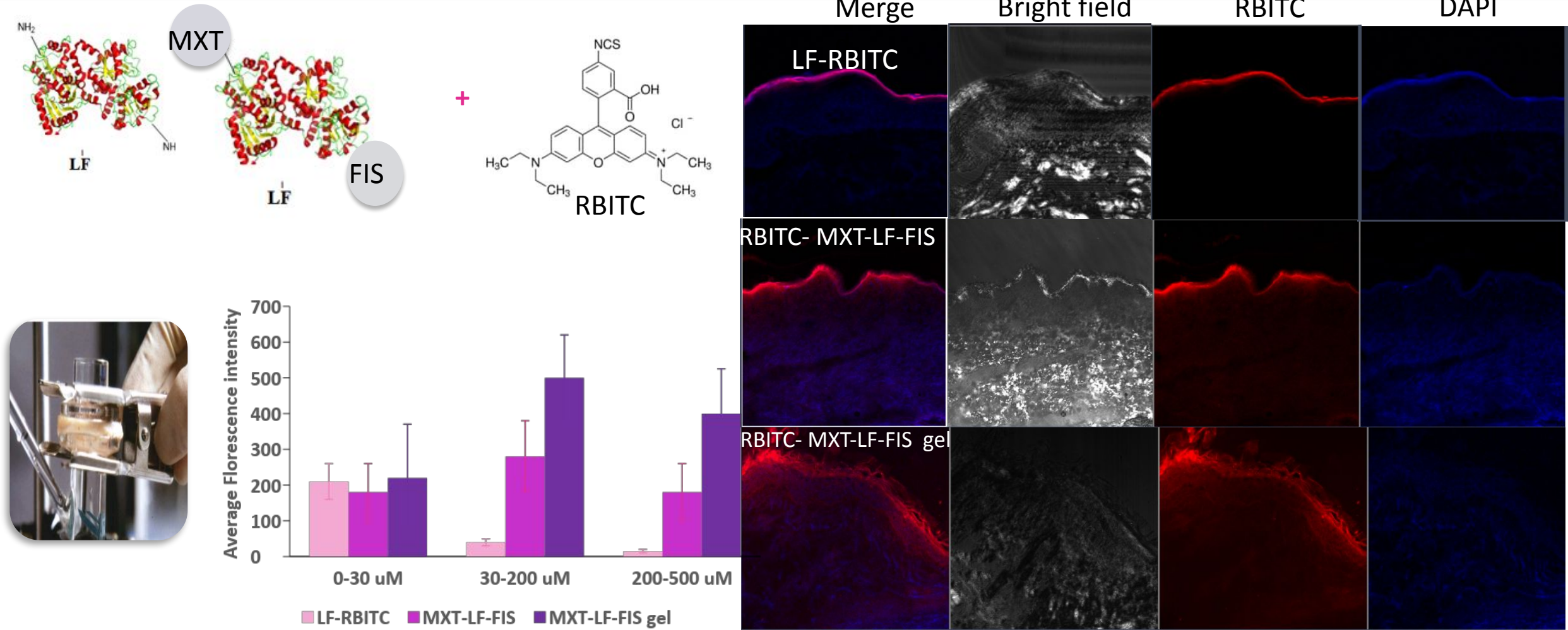
CRS 2022 Annual Meeting & Expo

Advanced Delivery Science

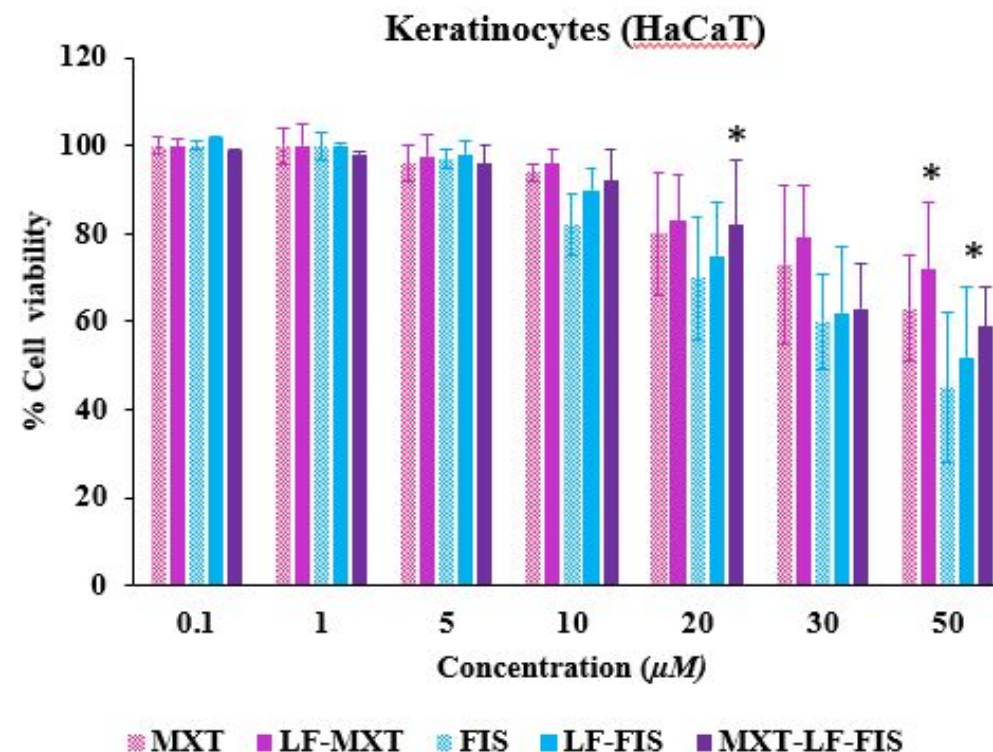
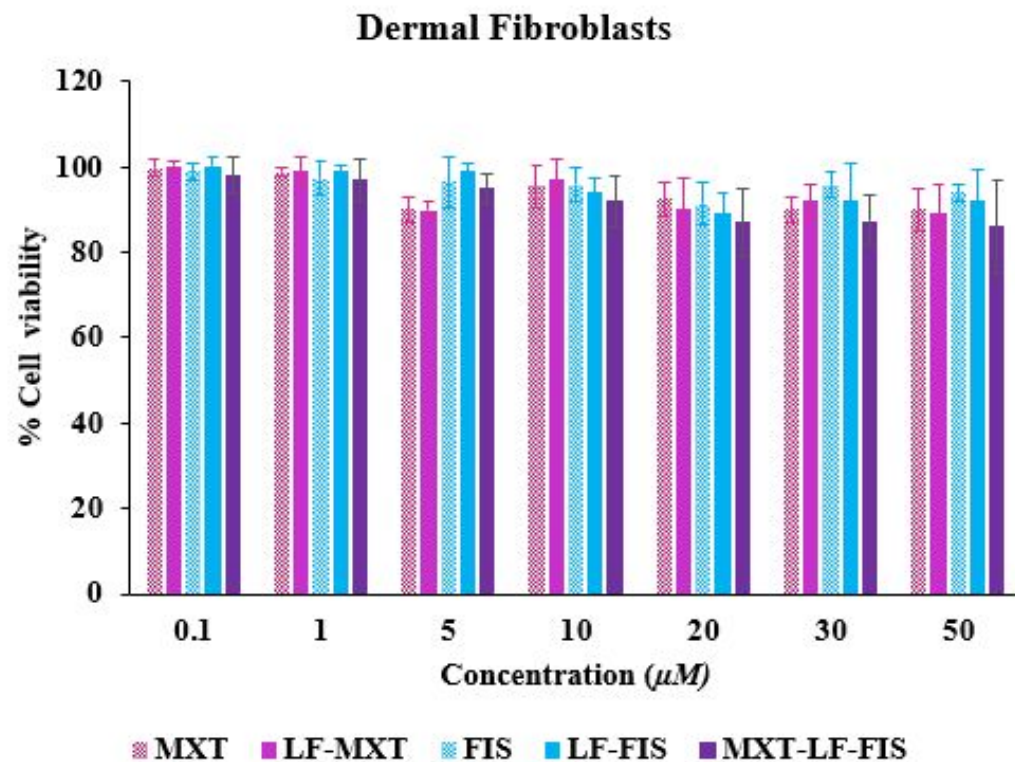
July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada



Synthesis of florescent MXT-LF-FIS conjugates and Ex-vivo human skin permeation



Effect on the viability of Dermal fibroblasts & keratinocytes (HaCaT)

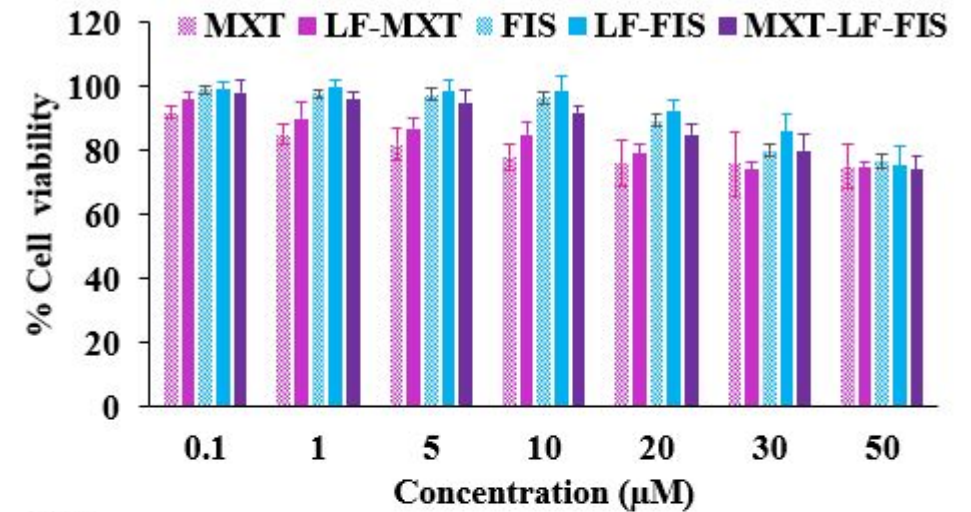
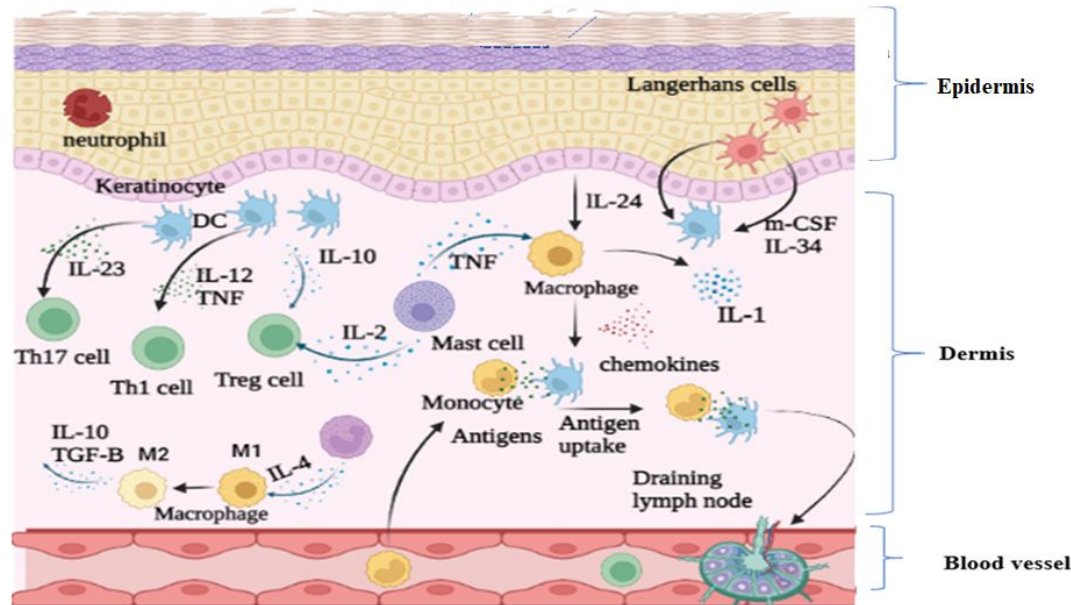


CRS 2022 Annual Meeting & Expo

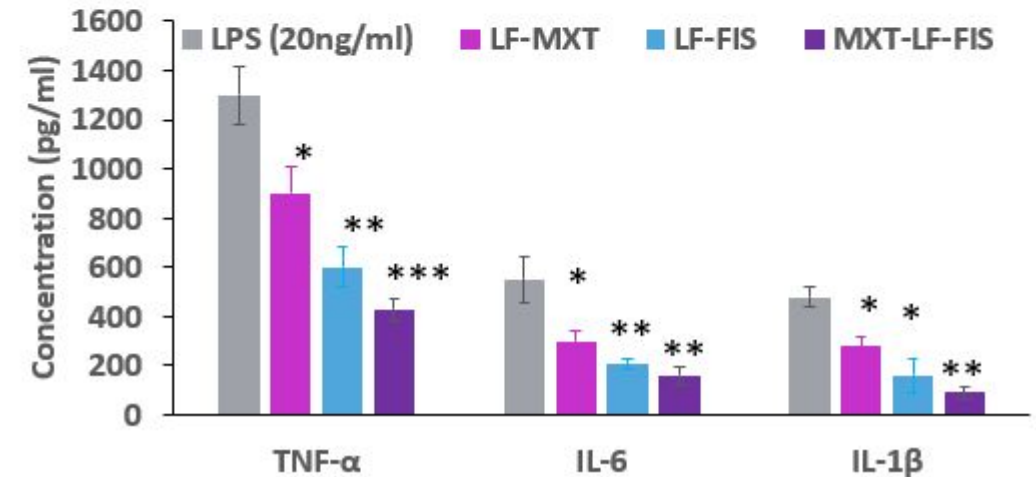
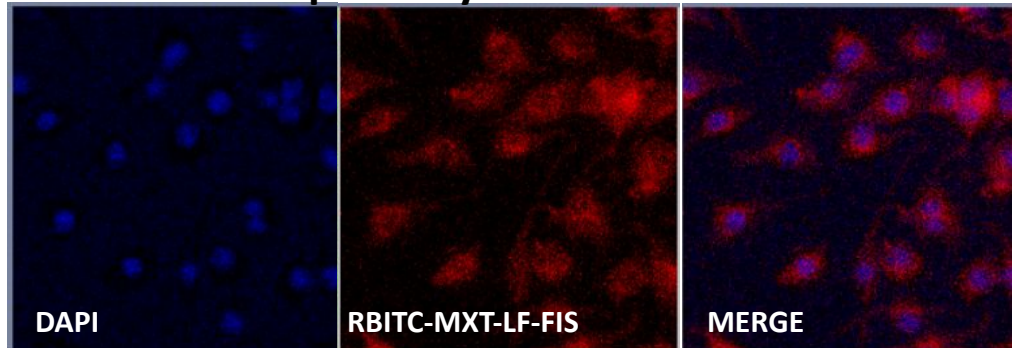
Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

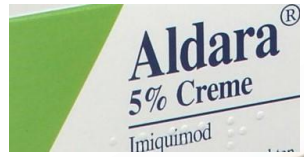
Effect on the macrophage viability and production of inflammatory cytokines



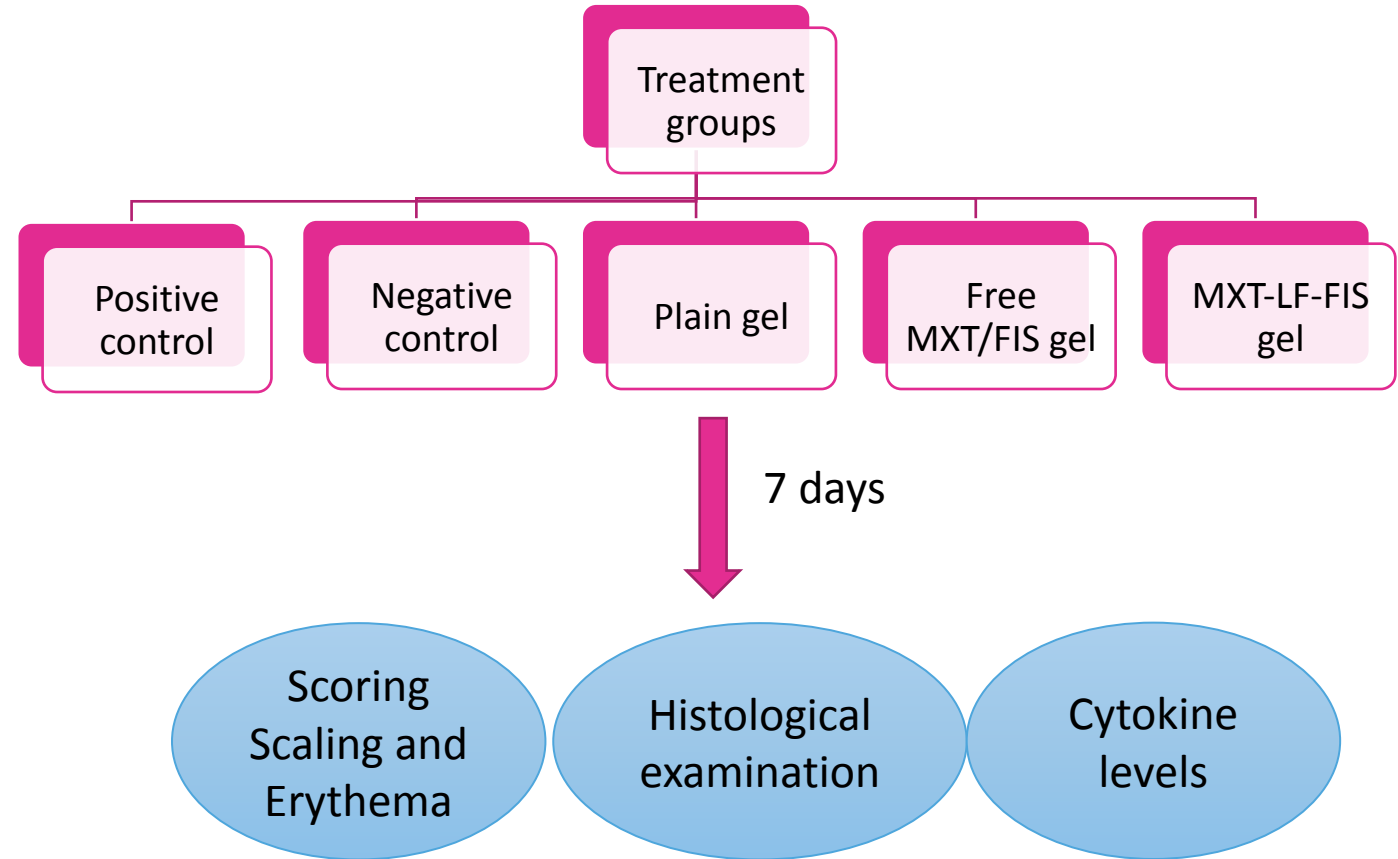
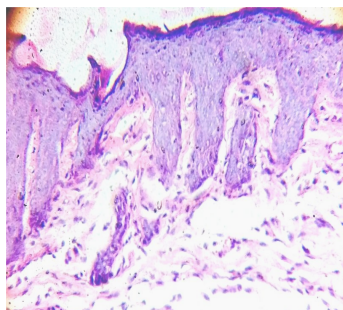
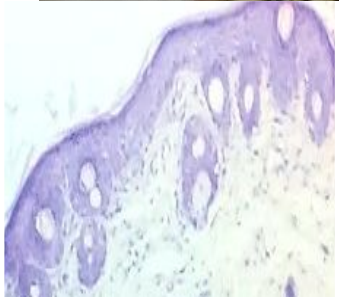
Uptake by RAW 247.1

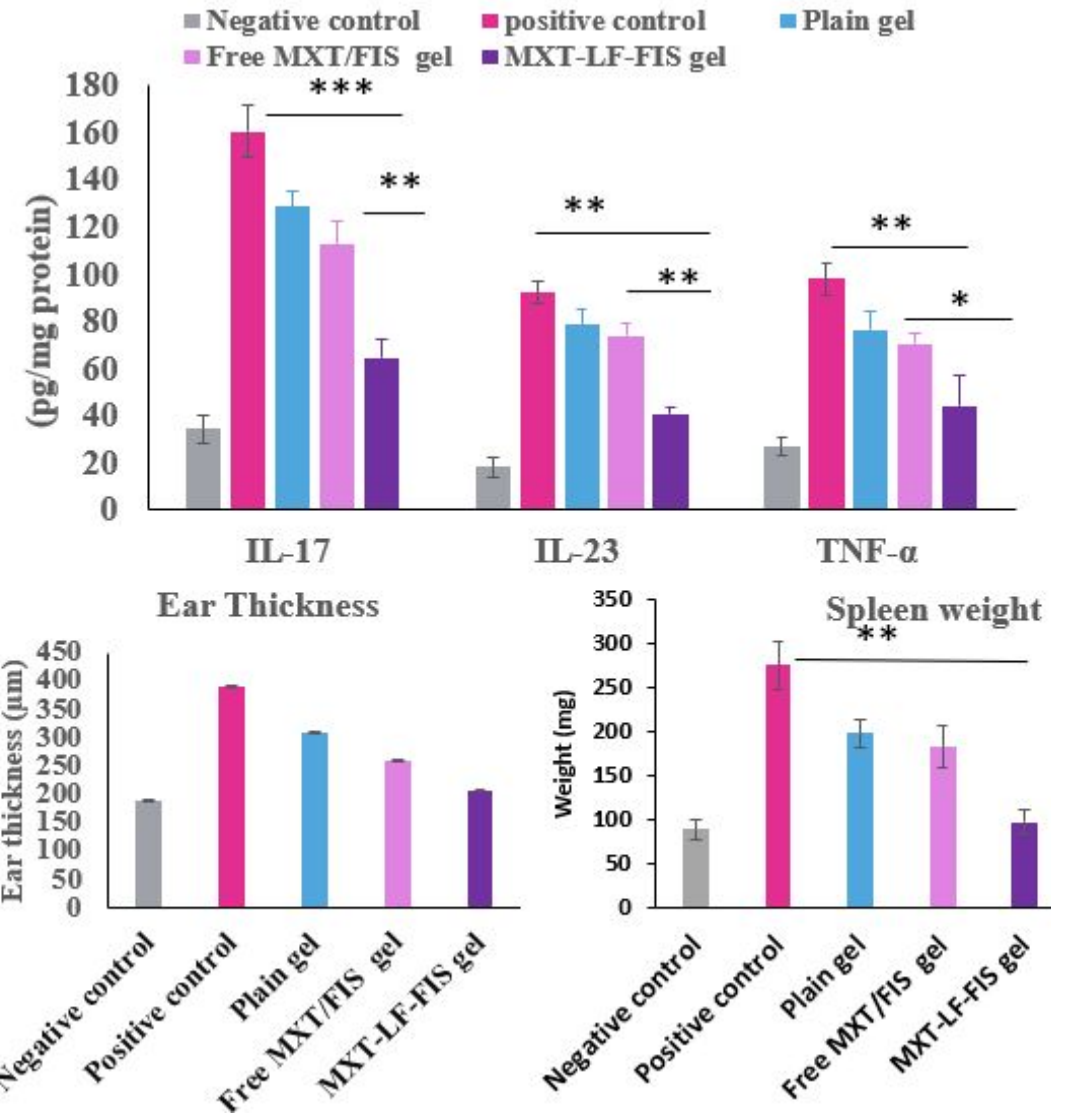
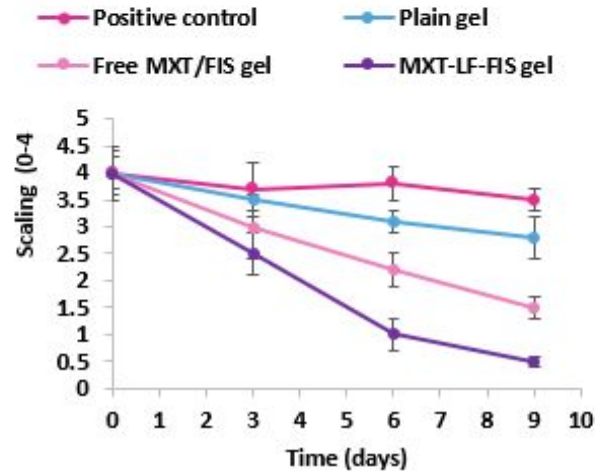
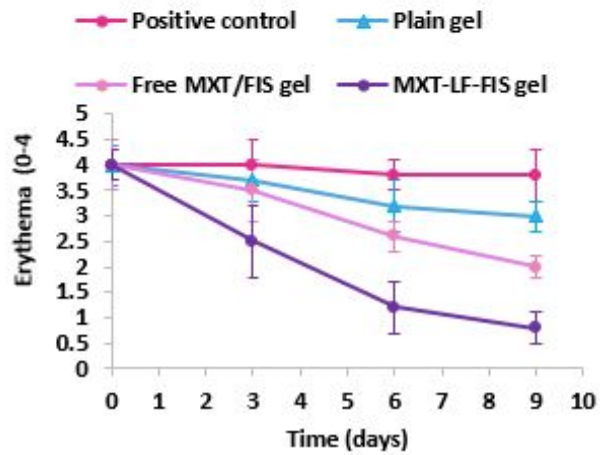
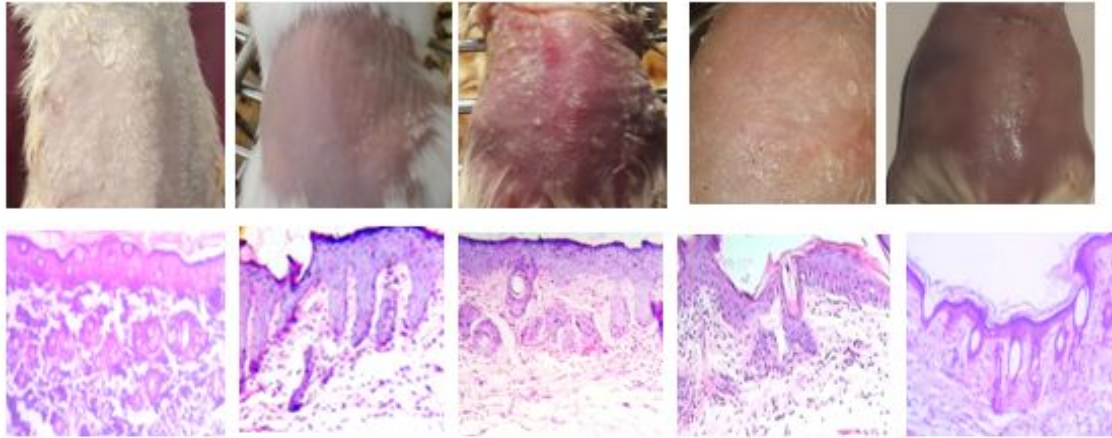


In vivo antipsoriatic efficacy



7 days





CRS 2022 Annual Meeting & Expo

Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada



Conclusion

We designed a localized treatment approach for psoriasis harnessing the bioactivity & structural functionality of GRAS natural components.

Conjugation of LF to hydrophobic drugs allows its dermal delivery & significantly improves the drugs' pharmacological activity

...e
...alternative that can be
clinically translated
lowering the
socioeconomic burden of
the patient treatment in
...the long run

Opens a **new horizon** in the field of localized dermal for aggressive skin diseases, such as cancer



CRS 2022 Annual Meeting & Expo

Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada





CRS 2022 Annual Meeting & Expo

Advanced Delivery Science

July 11 – 15, 2022 | Montreal Congress Center, Montreal Canada

