UCLM
UNIVERSIDAD DE CASTILLA-LA MANCHA

"La Investigación nuestro mejor medicamento"

FACULTAD DE FARMACIA UCLM

Cosmeceutical evaluation of crocin-rich tomato extract liposomes

WORKSHOP INVESTIGACIÓN FACULTAD DE FARMACIA 2024

María Mondéjar López

BIOFORCE

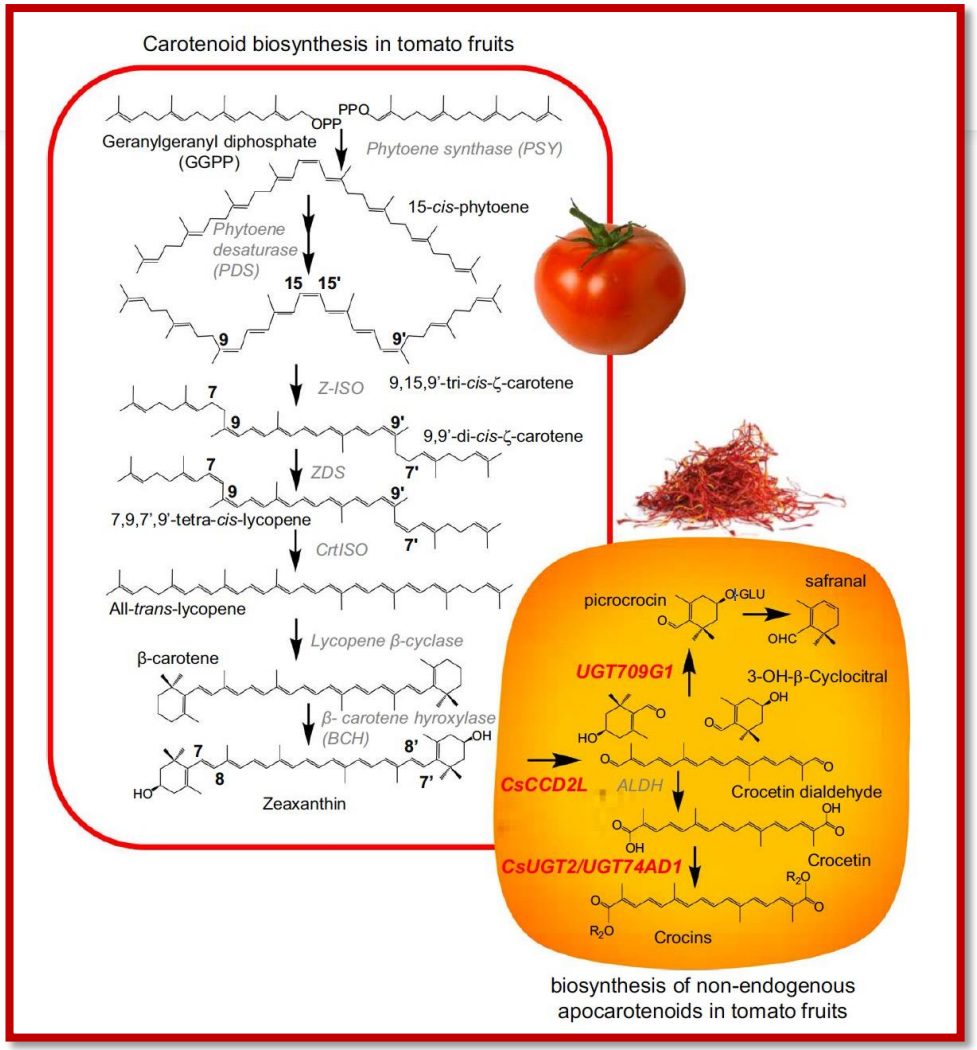
25 nov 2024

Instituto Botánico

Tomafran

Anti-inflammatory

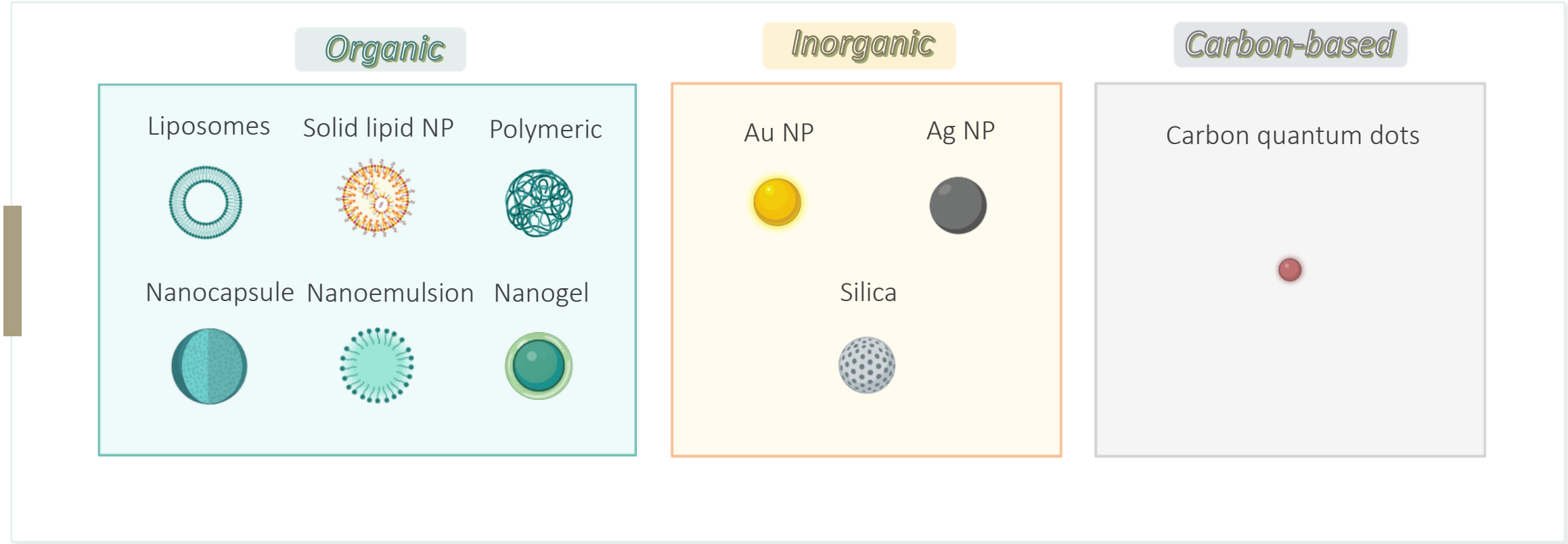
Anti-proliferarive activities



Neuroprotective

Anti-depressant

Nanotechnology-nanodevices



Nanotechnology applications

Cosmeceutics

Biomedicine

Phytosanitary industry

NAPLATEC
BIOTECHNOLOGY & NANOTECHNOLOGY

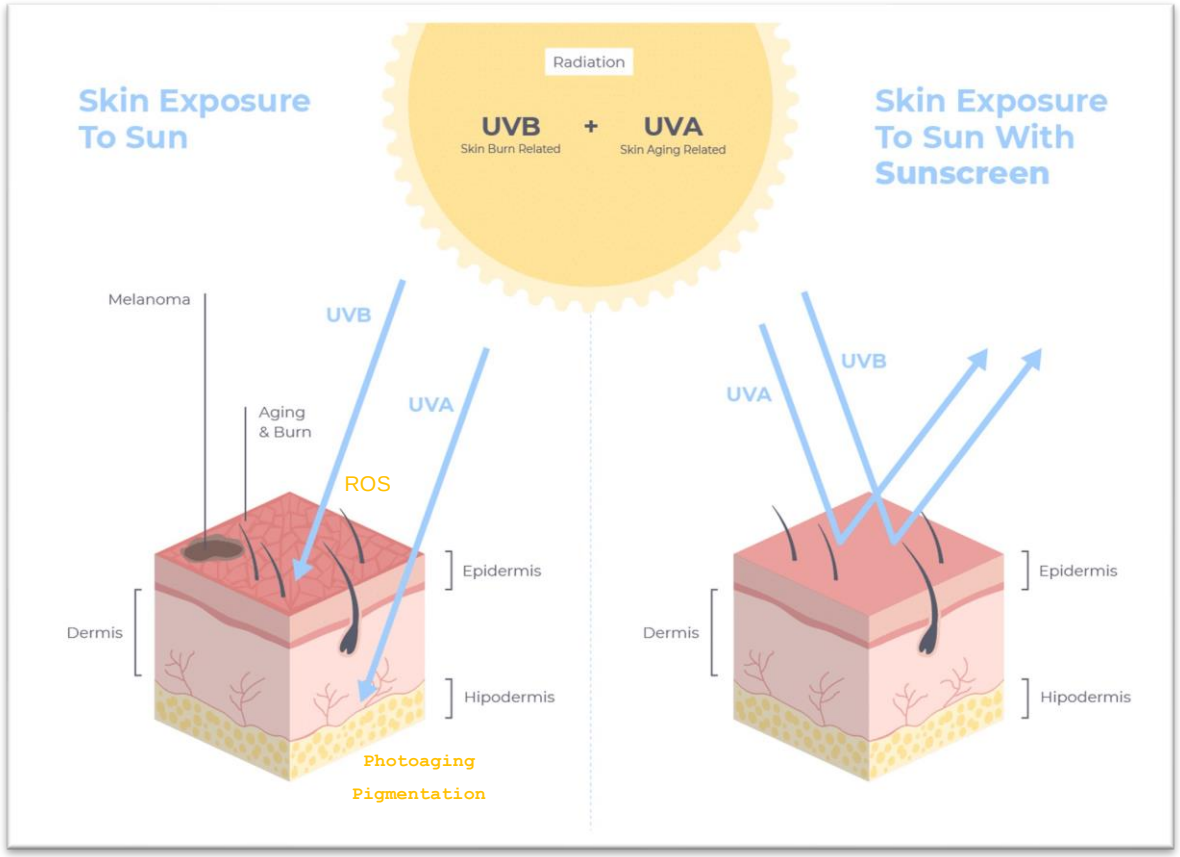
IBYDA
Instituto de Biotecnología y Desarrollo Azul

cantabria labs
celebrate life

LabAnalysis
HIGH QUALITY CONTROLS

Bionos
Testing Efficacy

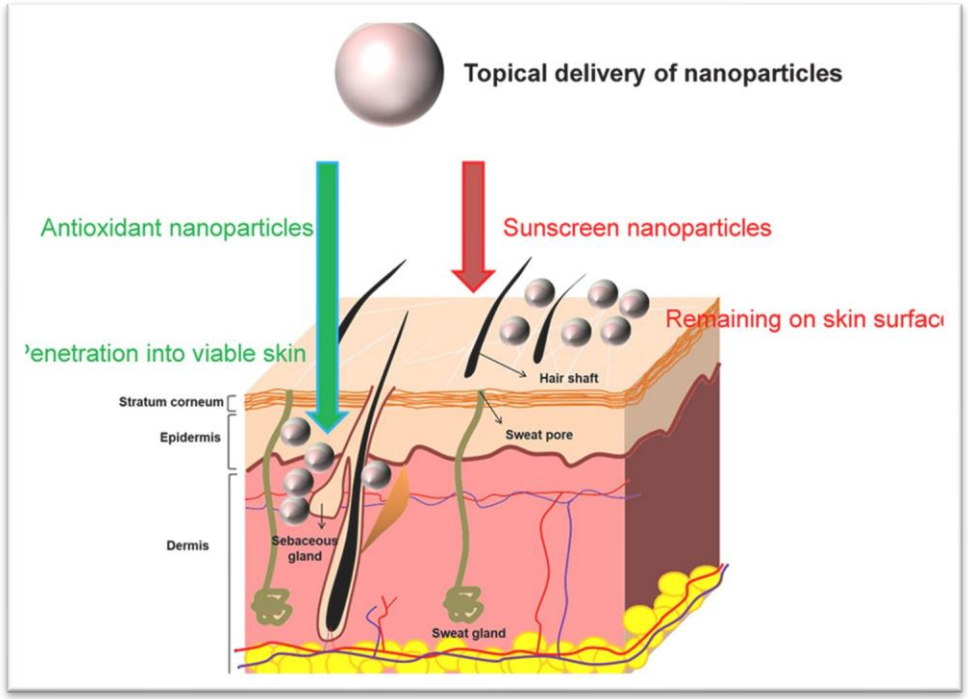
UV damages and UV filters



INORGANIC

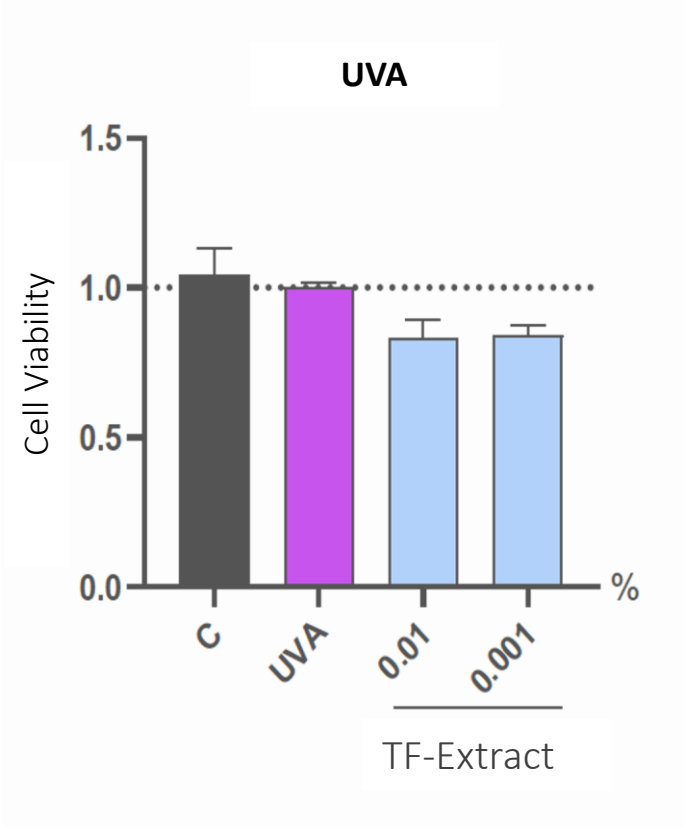
ORGANIC

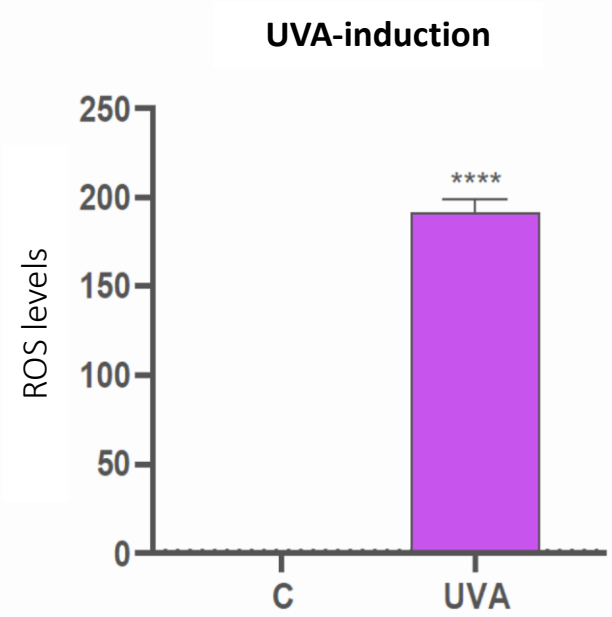
BIOLOGICAL

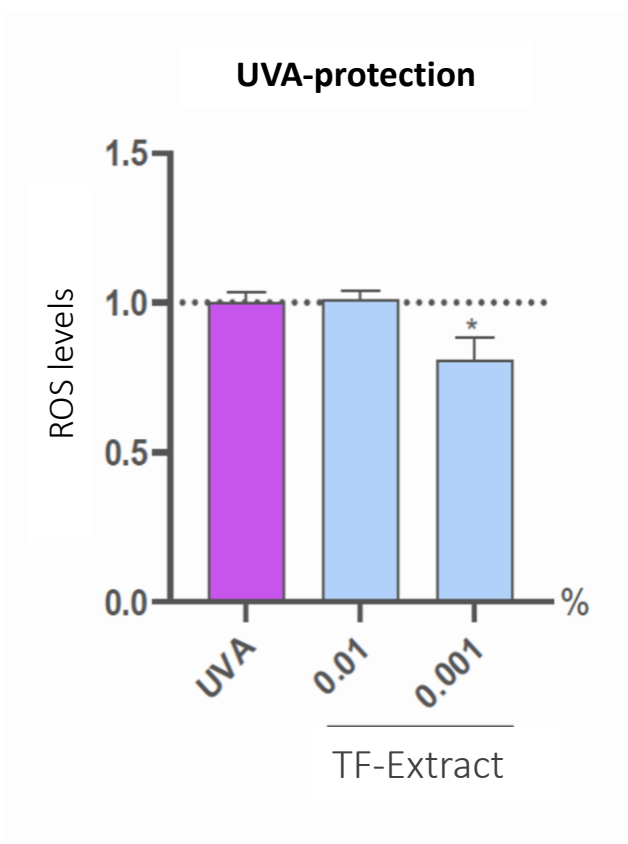


Lin, C. H., Lin, M. H., Chung, Y. K., Alalaiwe, A., Hung, C. F., & Fang, J. Y. (2024). Exploring the potential of the nano-based sunscreens and antioxidants for preventing and treating skin photoaging. Chemosphere, 347(August 2023), 140702. https://doi.org/10.1016/j.chemosphere.2023.140702

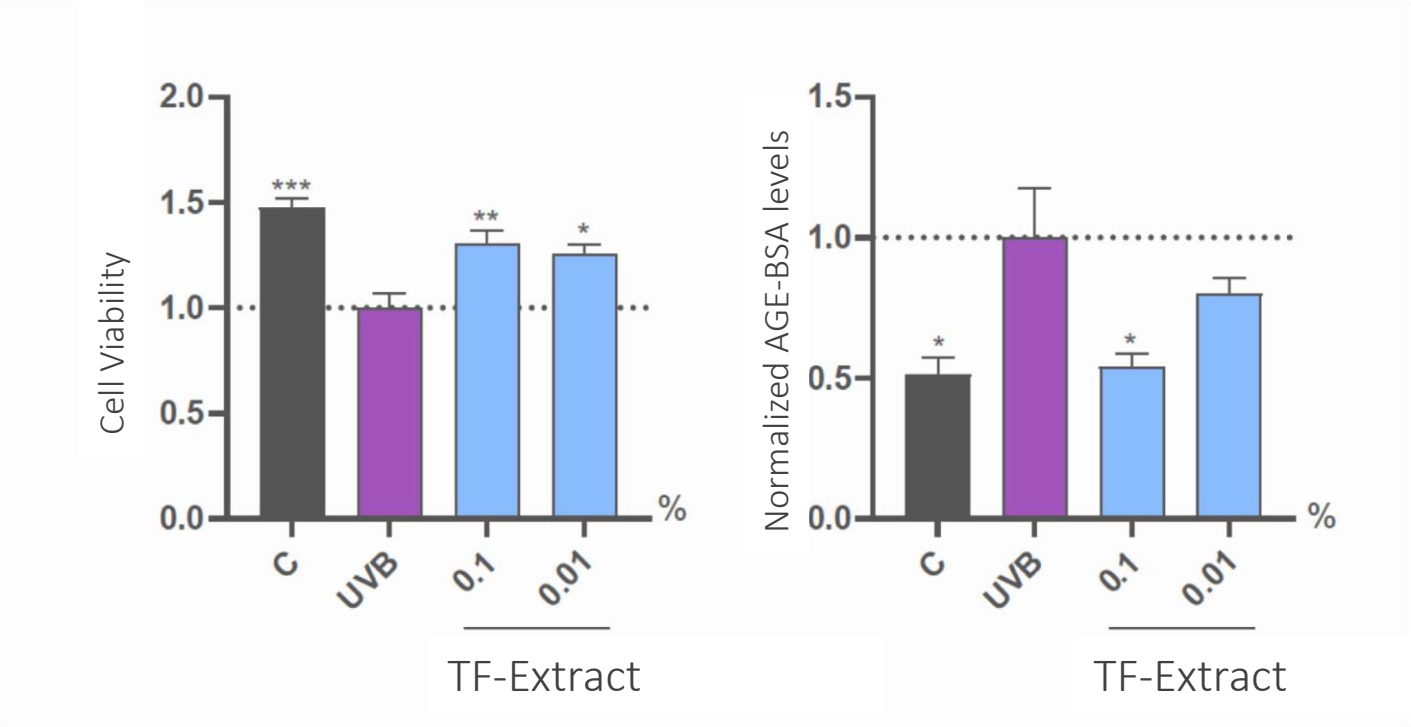
Cell viability after UVA exposure



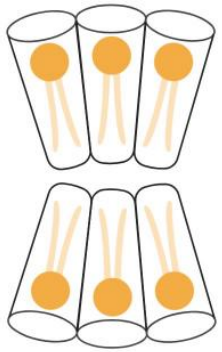


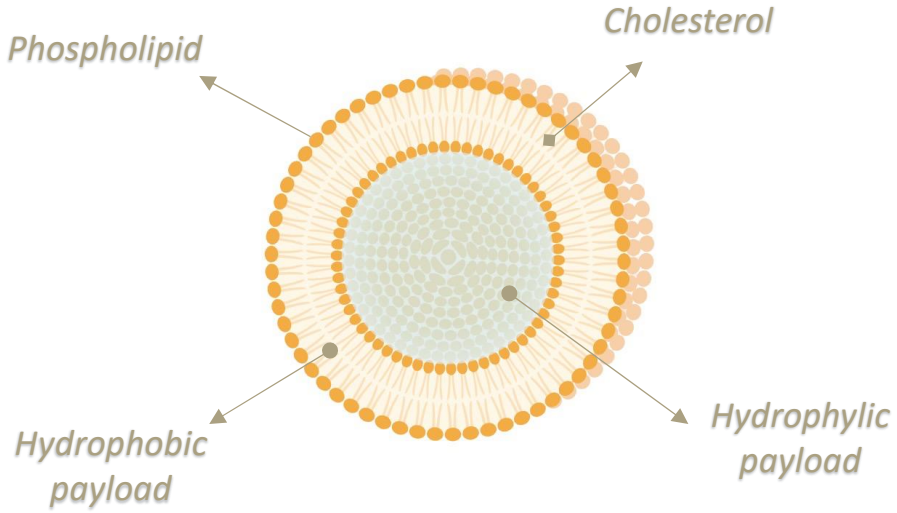


Cell viability of human fibroblast exposed to UVB radiation



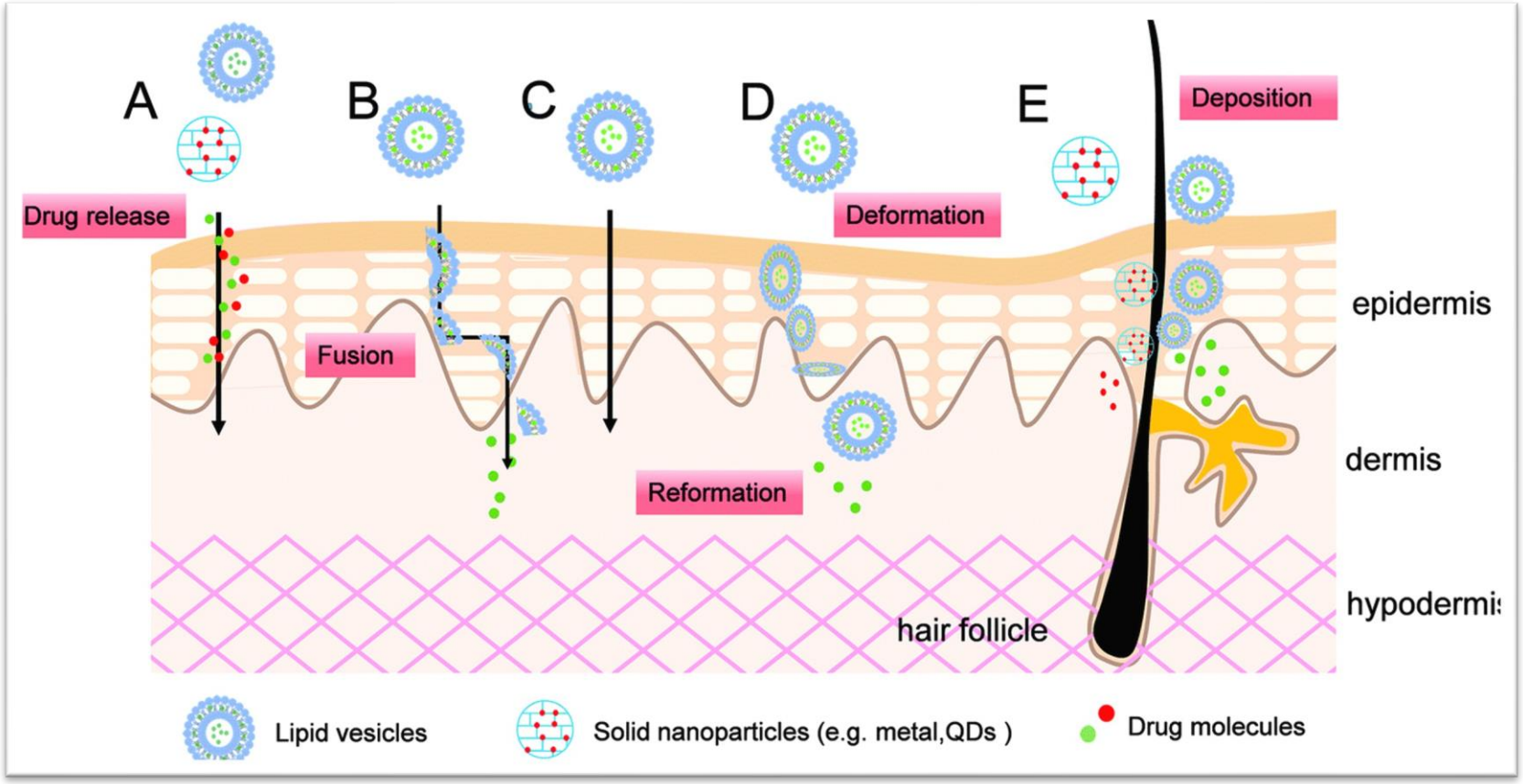
Nanosystems » lipid vesicles » liposomes





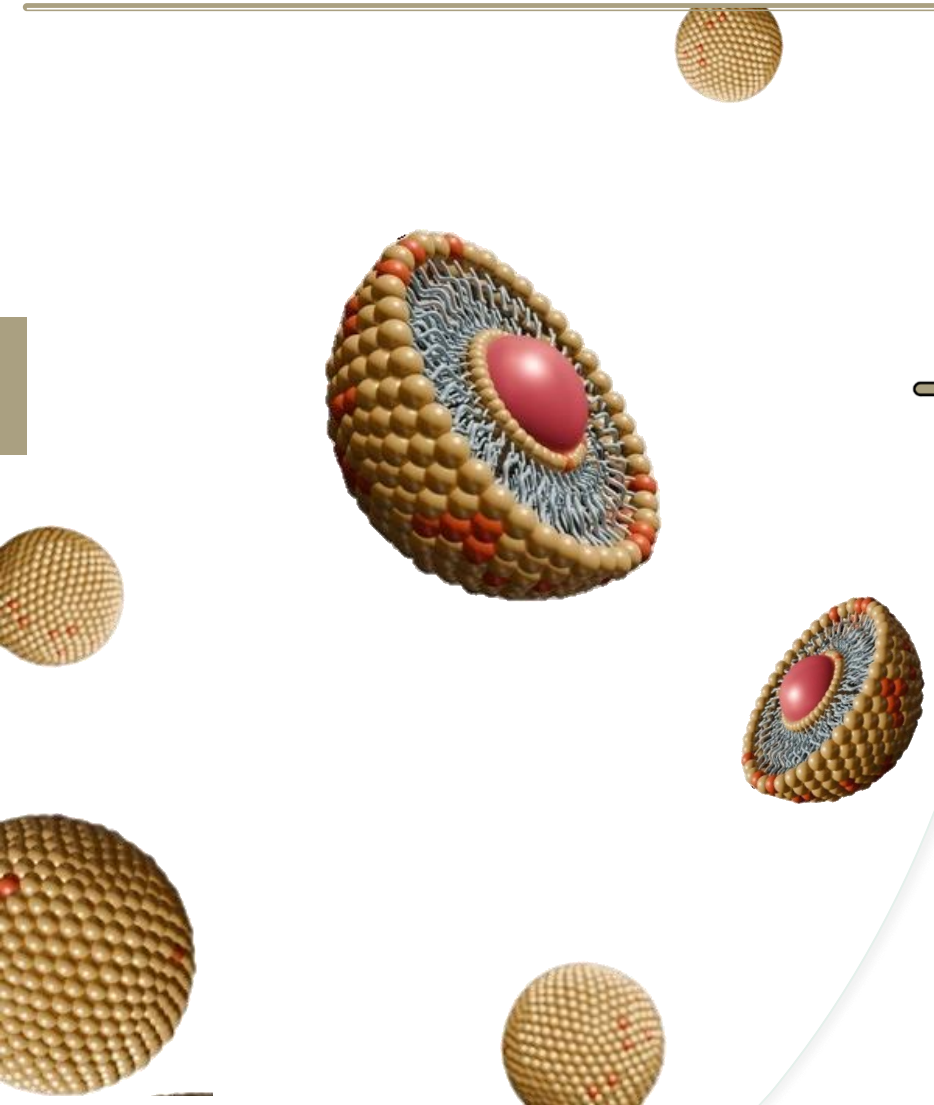
Folded two-dimensional bilayer forms a three-dimensional hollow vesicle enclosing an aqueous cavity

Transdermal delivery

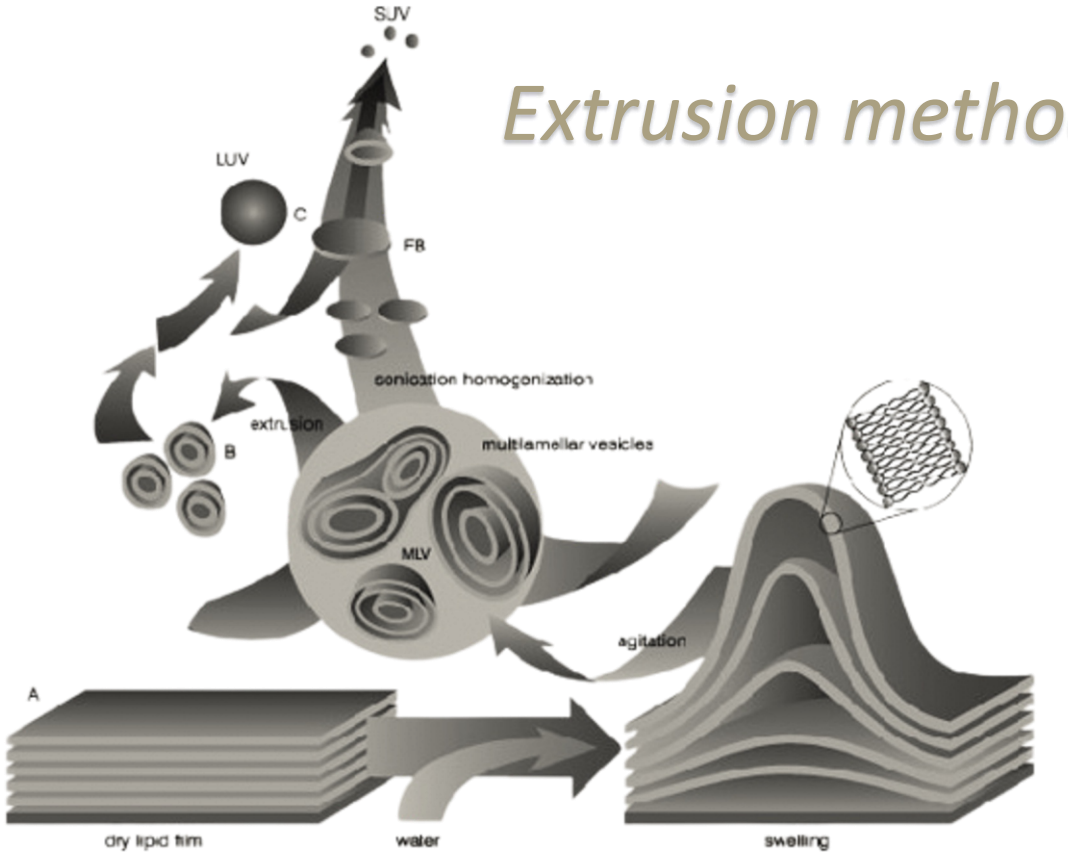


Ruan, S., Zhang, Y., & Feng, N. (2021). Microneedle-mediated transdermal nanodelivery systems: A review. *Biomaterials Science*, *9*(24), 8065–8089. https://doi.org/10.1039/d1bm01249e

Liposome formulation



Extrusion method

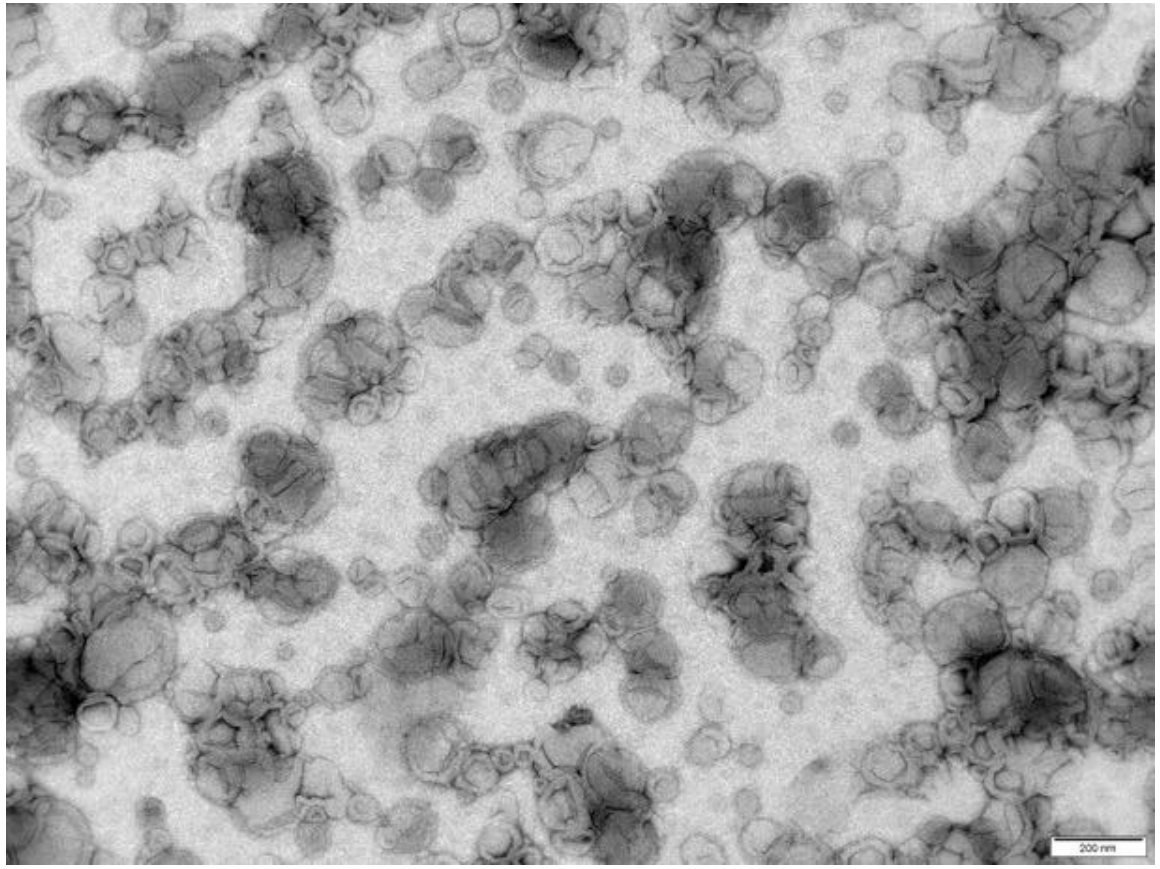


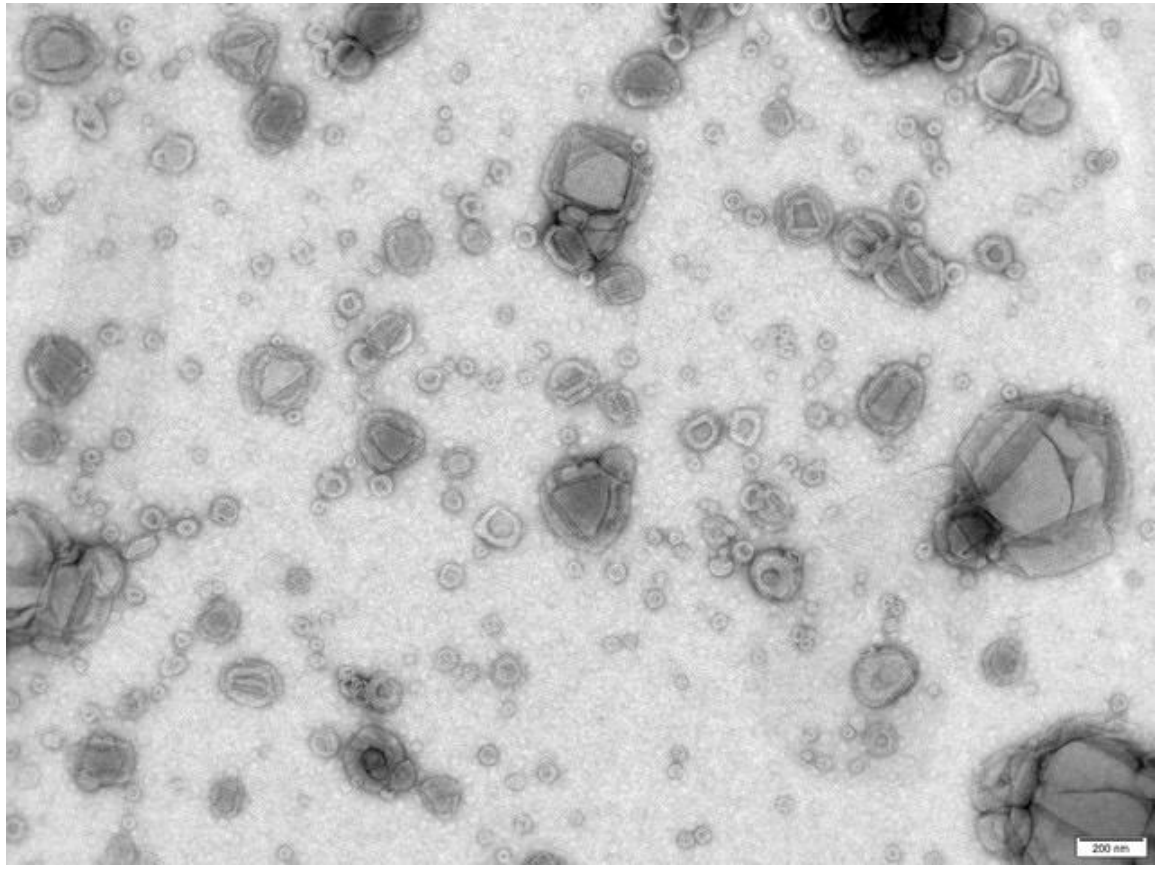
Liposome characterization

Liposomes	Days	Average size (r.nm)	PDI	Z-potential (mV)	%EE	LE%
Un-loaded Liposomes	0	80.71 ± 0.28	0.17 ± 0.02	−34.3 ± 2.8	-	-
	15	83.45 ± 0.61	0.22 ± 0.01	-28.40±0.74	-	-
	30	84.08 ± 0.16	0.342 ± 0.02	10.65 ± 1.77	-	-
Liposomes-TF	0	60.96 ± 0.18	0.06 ± 0.00	−21.50 ± 0.85	16.12 ± 0.02	24.24± 0.02
	15	73.10 ± 2.06	0.25 ± 0.03	−27.35 ± 0.21	-	-
	30	63.13 ± 0.35	0.06 ± 0.03	−24.95 ± 4.17	-	-

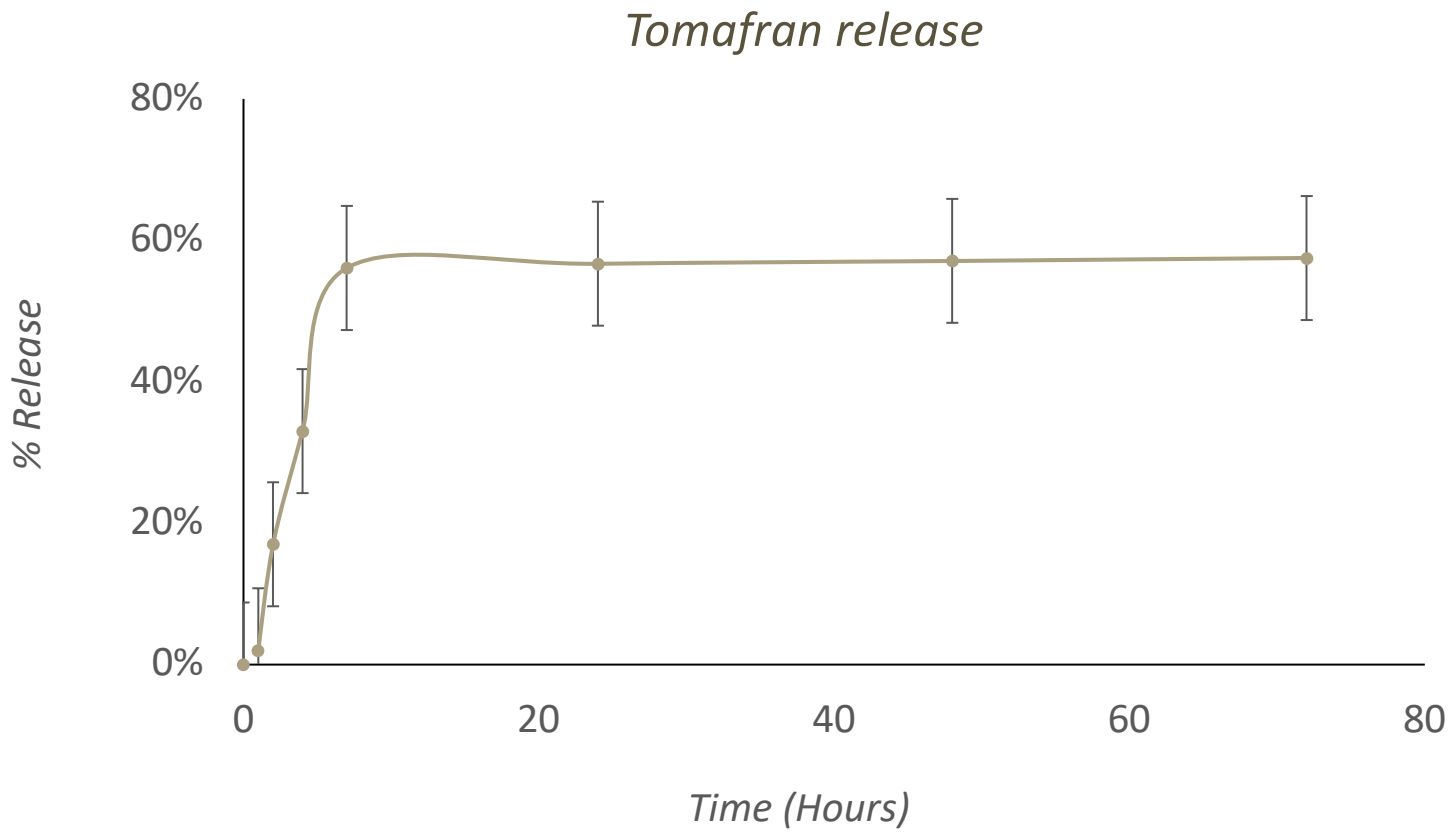
Liposomes before and after

lyophilizatization





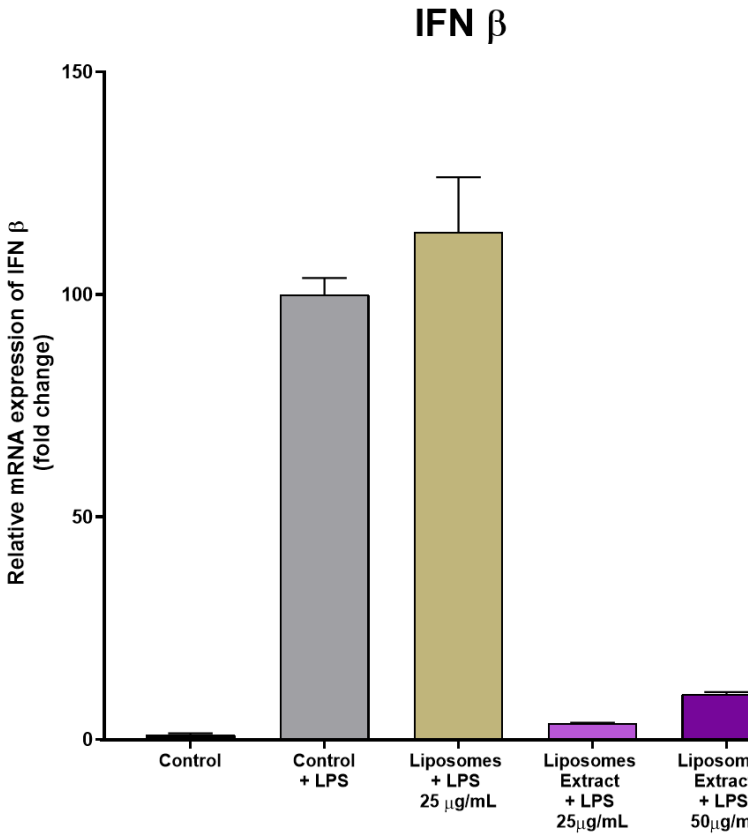
In vitro release study of Tomafran- Liposomes

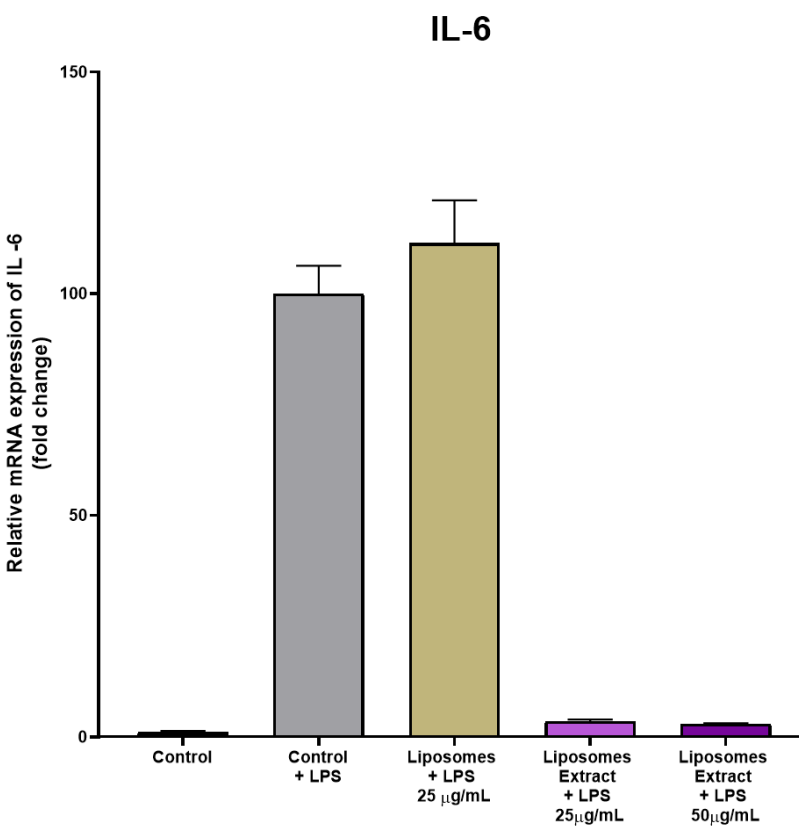


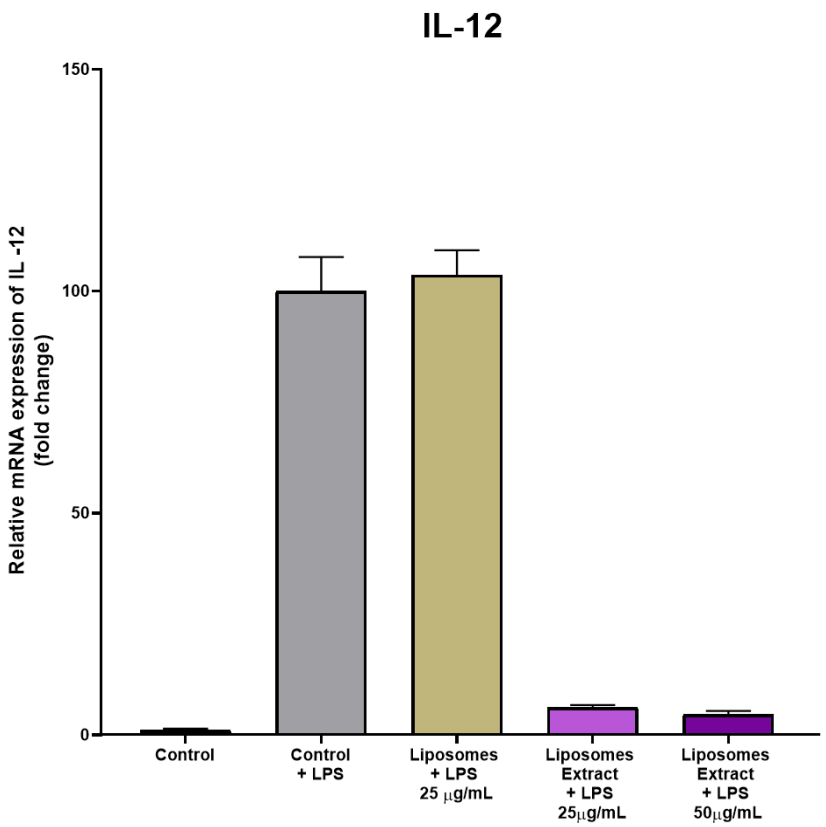
SPF, UVAPF and photoprotection values

	Base	*5% TF*	*10% TF*	*15% TF*	*Lipos 10%*	*Lipos 20%*
SPF	1.20 ± 0.00	1.36 ± 0.02	1.46 ± 0.12	1.64 ± 0.12	1.21 ± 0.02	1.22 ± 0.01
UVAPF	1.01 ± 0.00	1.08 ± 0.00	1.12 ± 0.04	1.20 ± 0.05	1.04 ± 0.01	1.03 ± 0
Elastosis	1.03 ± 0.00	1.11 ± 0.01	1.16 ± 0.04	1.24 ± 0.05	1.06 ± 0.01	1.05 ± 0
Photoaging	1.01 ± 0.00	1.08 ± 0.00	1.13 ± 0.04	1.20 ± 0.05	1.04 ± 0.01	1.03 ± 0
Photocarcinogenesis	1.36 ± 0.01	1.57 ± 0.04	1.70 ± 0.20	1.99 ± 0.18	1.34 ± 0.03	1.39 ± 0.03
Immunosuppression	1.29 ± 0.01	1.49 ± 0.03	1.61 ± 0.17	1.85 ± 0.16	1.29 ± 0.03	1.32 ± 0.03
Singlet oxygen	1.01 ± 0.00	1.08 ± 0.00	1.14 ± 0.04	1.23 ± 0.05	1.04 ± 0.01	1.03 ± 0

Proinflamatory levels of Raw 264.7 treated cells after LPS induction



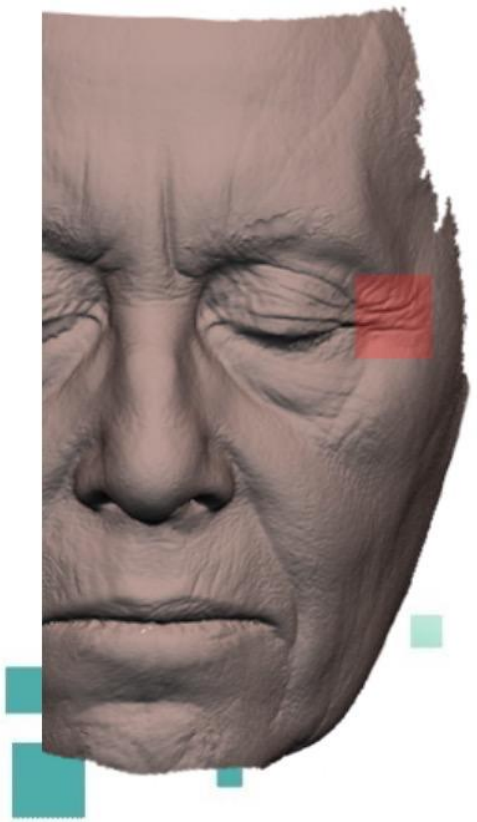


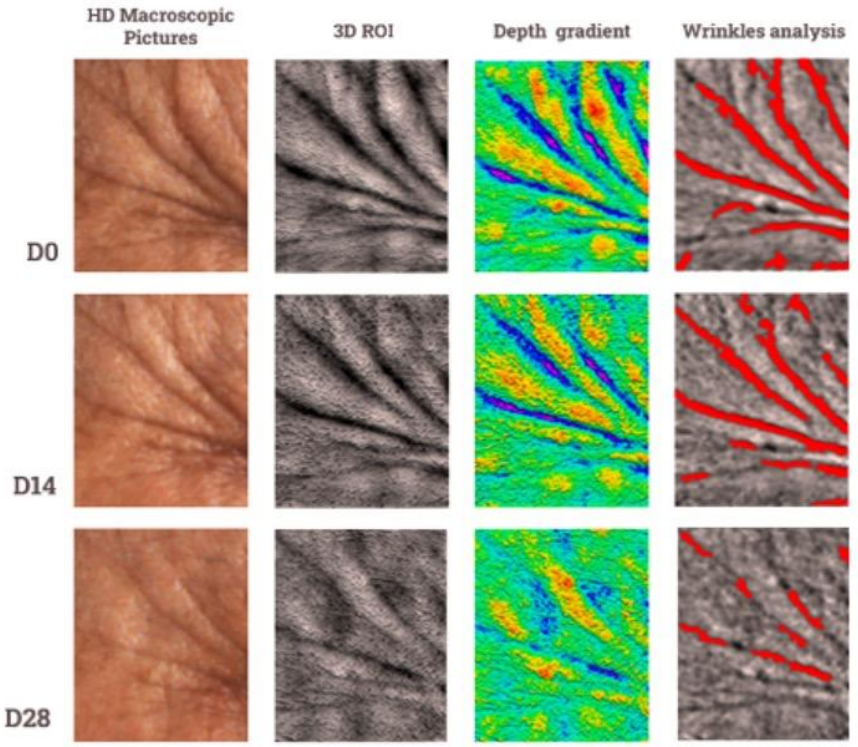


Future perspectives

- *Skin permeation assays*

- *Clinical Efficacy testing*






THANK YOU!