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Encapsulated Vitamin C interaction with topical delivery systems and skin

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 EN CHIMIE ORGANIQUE
 ET MACROMOLÉCULAIRE

INTRODUCTION

Ascorbic acid
 water soluble anti-age antioxidant

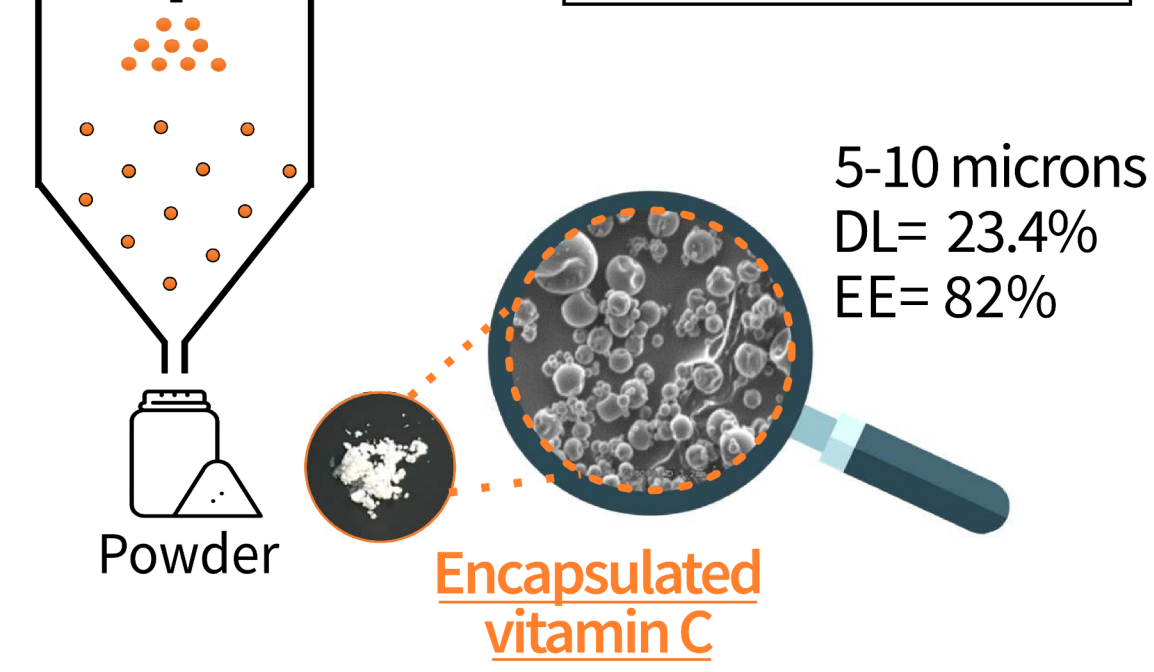
very unstable $\xrightarrow[\text{O}_2]{\text{pH } T^\circ}$ inactive

MICROENCAPSULATION
 spray-drying stability efficacy reproducible

Texture?
 Interactions with skin?
 Sensory performances?

ASCORBIC ACID ENCAPSULATION

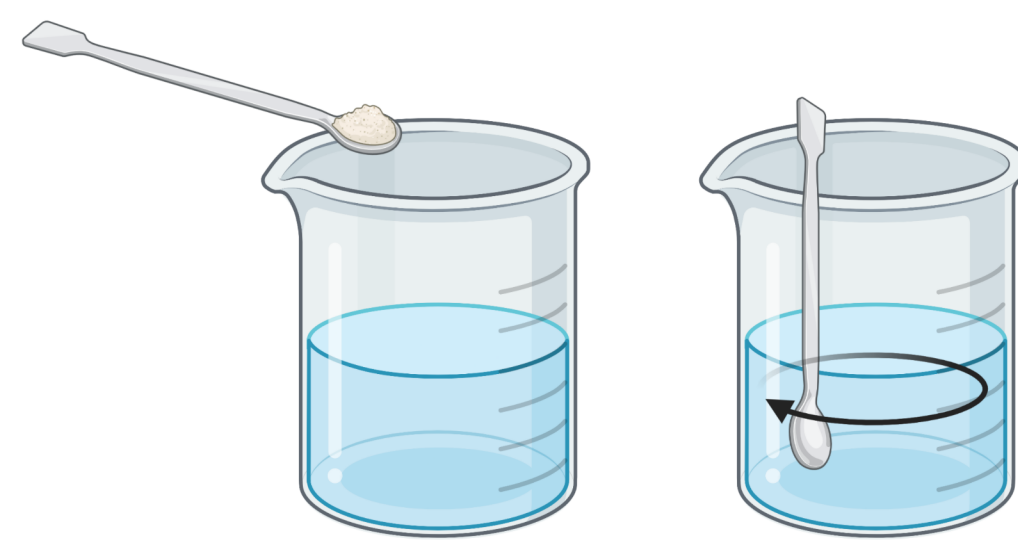
MDGA-AA solution
 MD: Maltodextrin
 GA: Gum arabic
 AA: Ascorbic acid



DL: Drug loading
 EE: Encapsulation efficiency

MICROPARTICLES INCORPORATION

90% cosmetic system
 10% MDGA
 1min manual stirring



COMPOSITION OF COSMETIC MATRICES

Viscous O/W emulsion (VOW)	
INCI	%
Aqua	78
Glycerin	3
Xanthan gum	0.4
Glyceryl stearate citrate	4
Prunus amygdalus dulcis oil	5
Stearic acid	5
Isononyl isononanoate	4
Dehydroacetic acid, benzyl alcohol	1

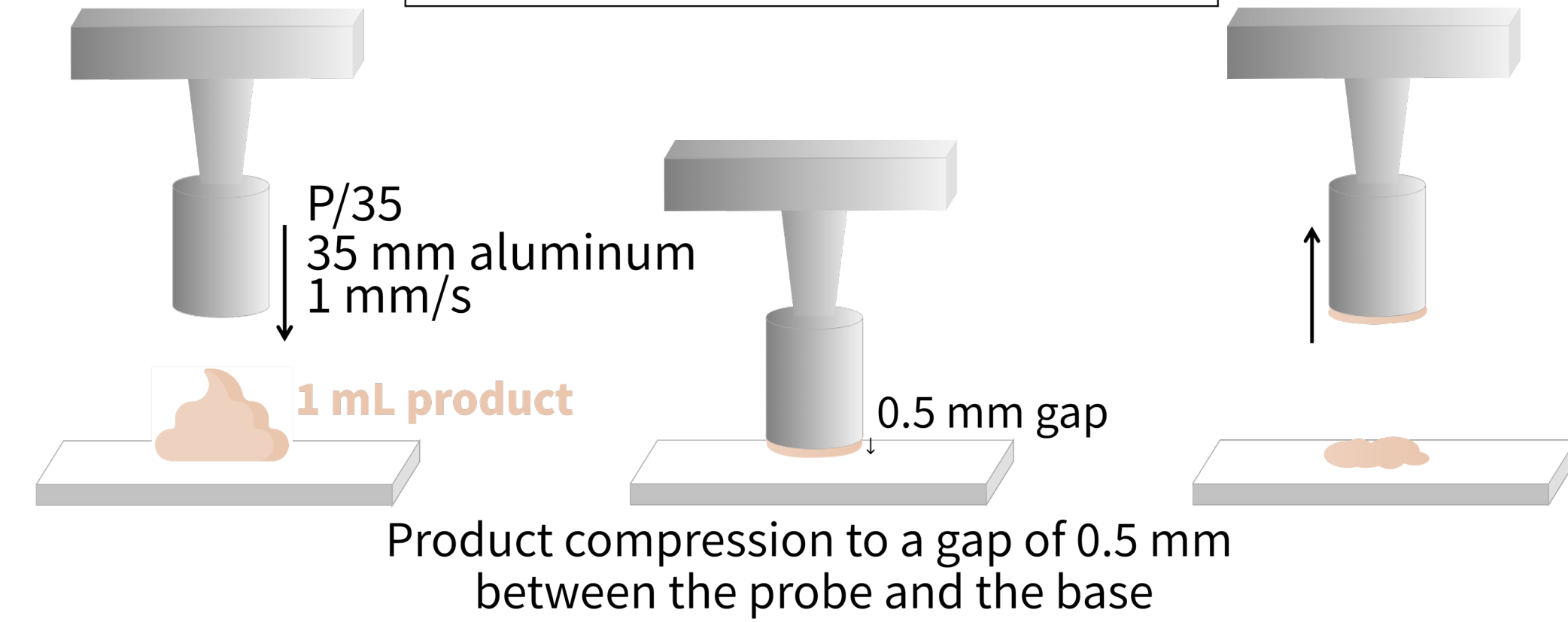
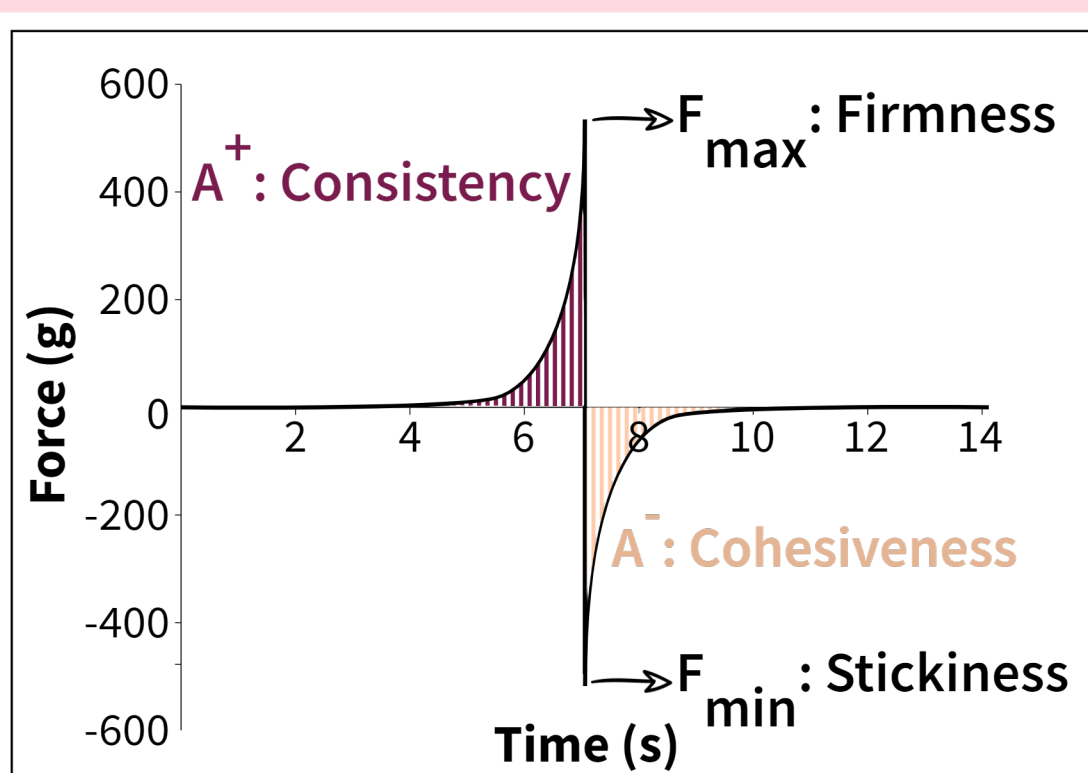
Fluid O/W emulsion (FOW)	
INCI	%
Aqua	77
Glycerin	3
Xanthan gum	0
Glyceryl stearate citrate	4
Prunus amygdalus dulcis oil	11
Isononyl isononanoate	4
Dehydroacetic acid, benzyl alcohol	1

Gelified oil (GO)	
INCI	%
Prunus amygdalus dulcis oil	92
Glyceryl behenate/Isostearate/Eicosadioate	8
Tocopherol	0.5

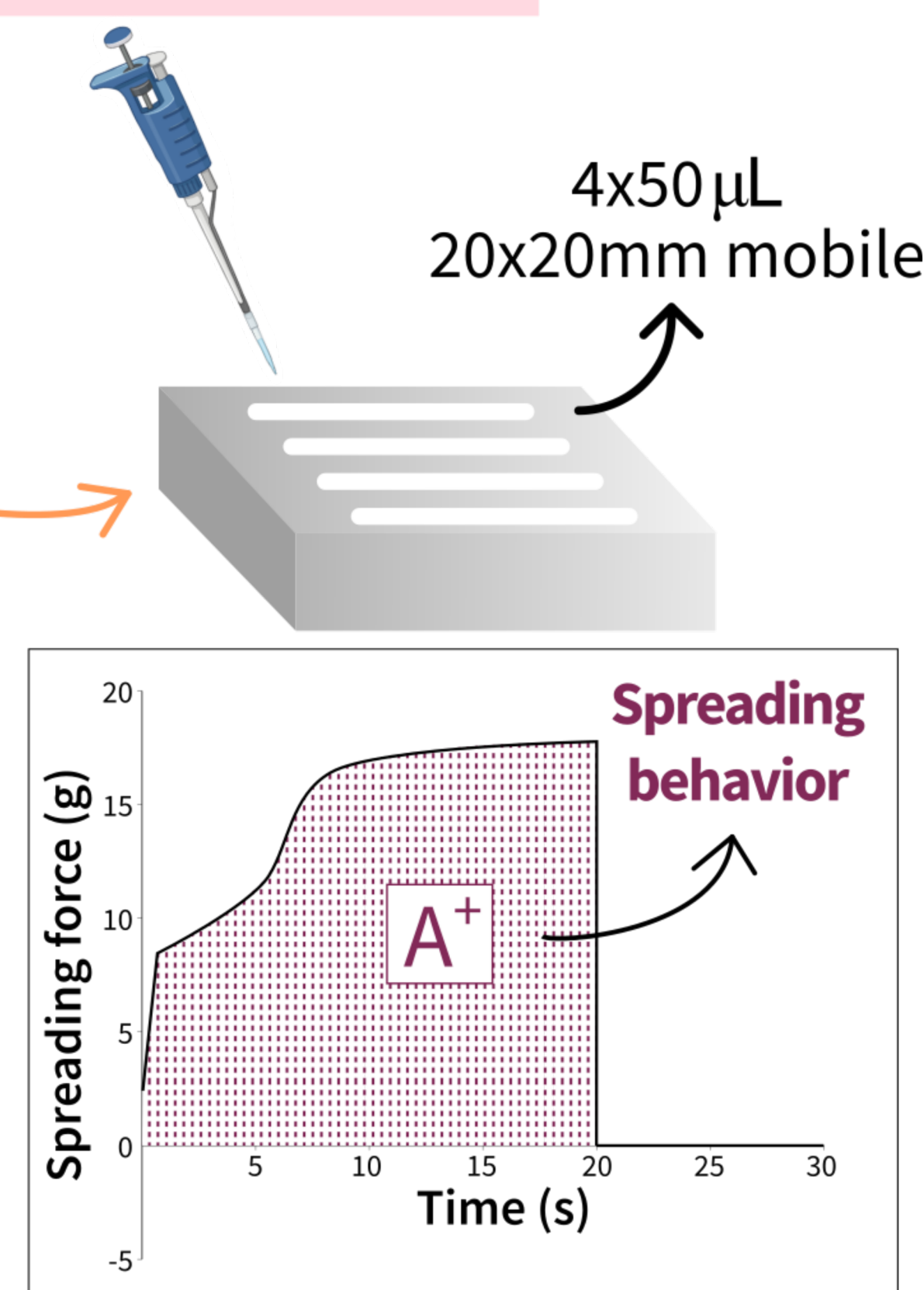
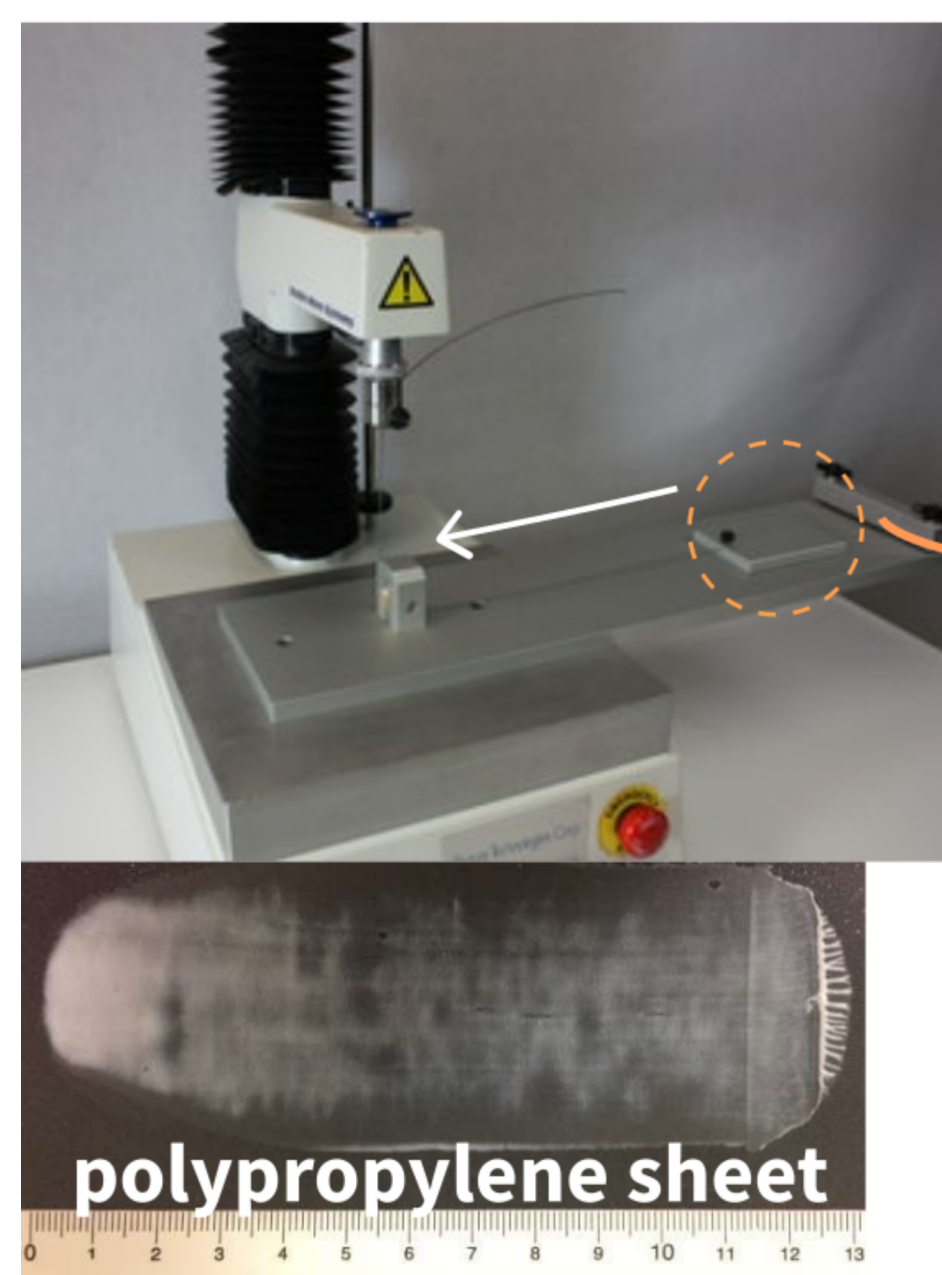


MATERIALS & METHODS

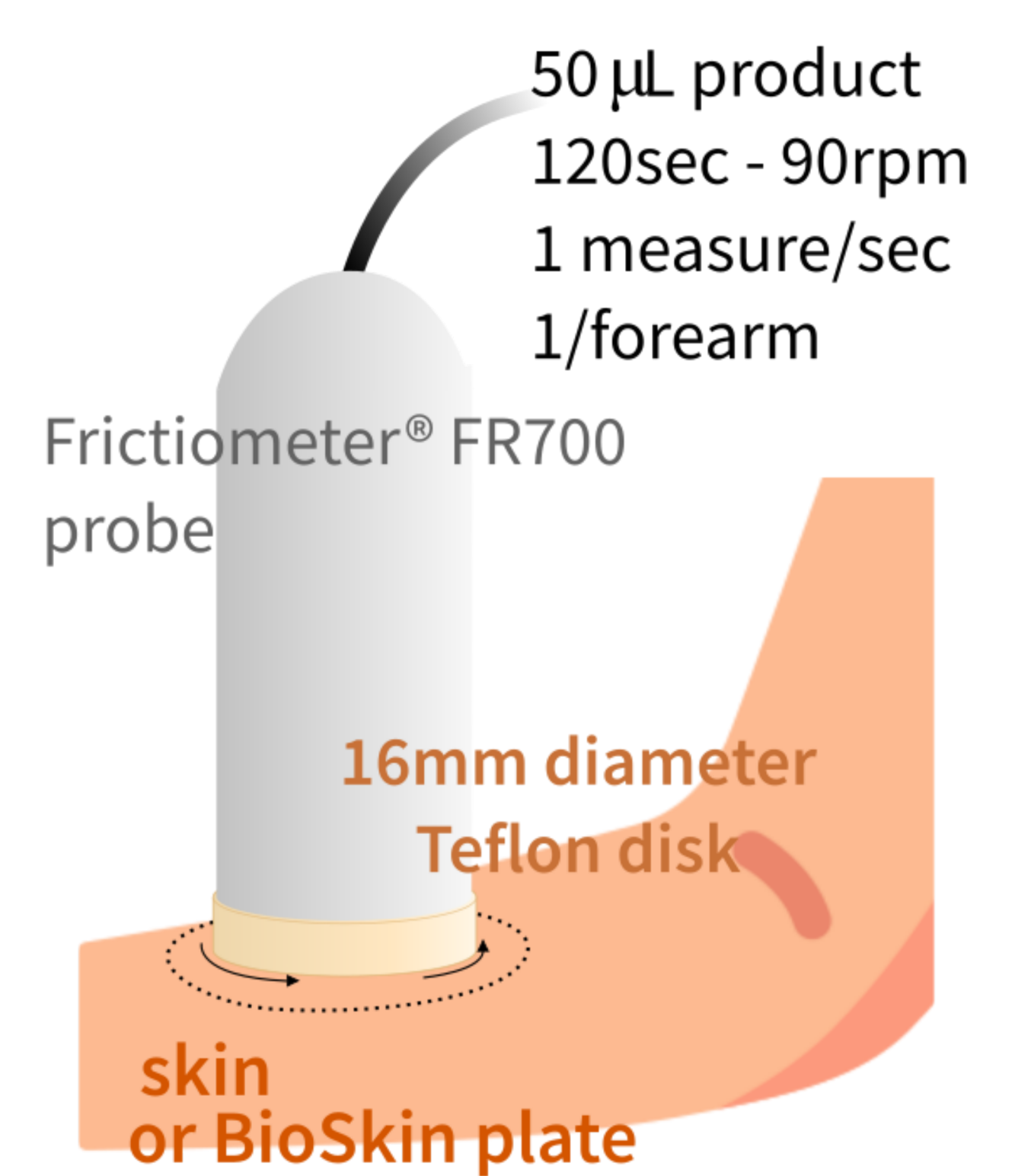
COMPRESSION TEST [7]



SPREADING TEST [7]

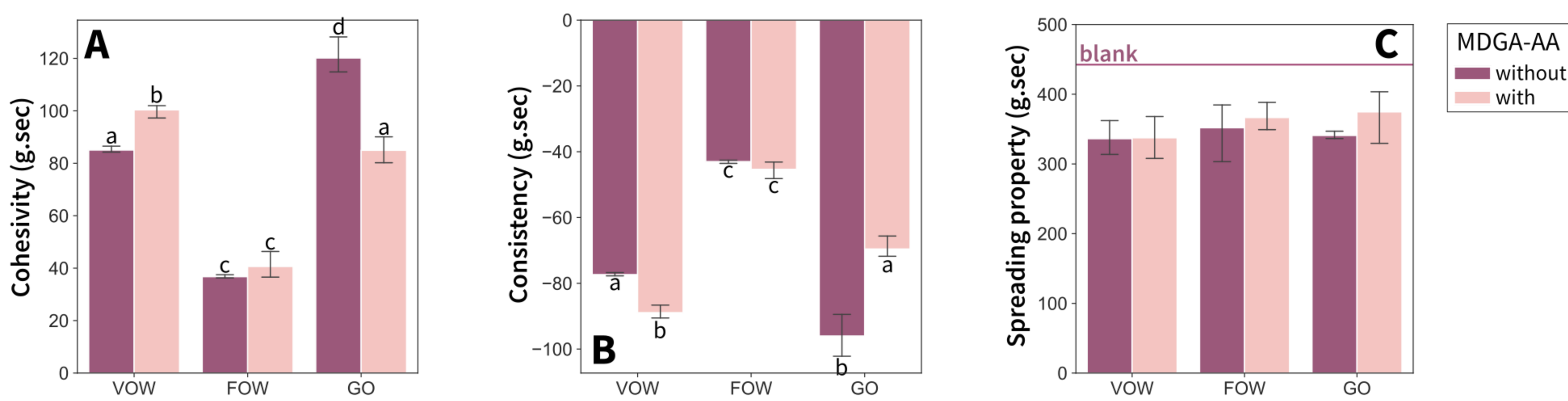


TRIBOLOGY



RESULTS

COMPRESSION (A-B) AND SPREADING (C) TEST ON COSMETIC MATRICES



MDGA-AA addition impacts textures of cosmetic systems:

- cohesivity and consistency in **VOW emulsion**
- cohesivity and consistency in **GO (loss of viscosity)**
- No significant effect on **FOW emulsion**

No significant differences between samples during the spreading test

CONCLUSIONS

- MDGA-AA microparticles affect texture properties
- Differences in consistency were perceived by the panelists
- Tribological study on BioSkin highlights differences in spreading
- Spreading on skin is still easy with microparticles according to panelists
- In-vivo study must be extended to a larger panel

ACKNOWLEDGEMENTS

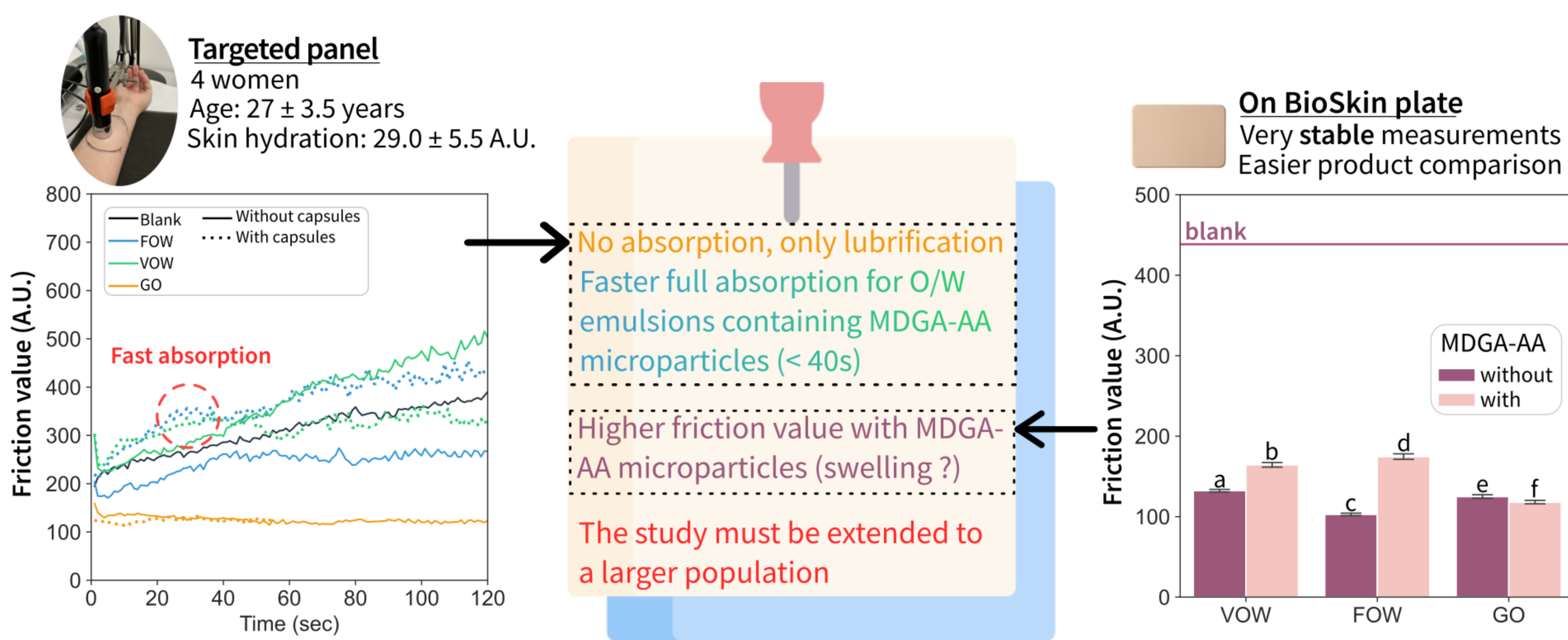
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TRIBOLOGY OF COSMETIC MATRICES WITH AND WITHOUT MICROPARTICLES



Targeted panel
 4 women
 Age: 27 ± 3.5 years
 Skin hydration: 29.0 ± 5.5 A.U.

On BioSkin plate
 Very stable measurements
 Easier product comparison

No absorption, only lubrication
 Faster full absorption for O/W emulsions containing MDGA-AA microparticles (< 40s)

Higher friction value with MDGA-AA microparticles (swelling?)

The study must be extended to a larger population