

# MECHANICAL ANALYSIS OF PHARMACEUTICAL FILMS CONTAINING SOLUPLUS FOR TOPICAL DELIVERY OF COPAIBA OIL

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## INTRODUCTION

Pharmaceutical films represent a promising advancement in drug delivery systems. They can provide enhanced treatment adherence, ease use, and controlled release of active agents [1,2]. Copaiba oil-resin (CO), renowned for its anti-inflammatory, healing, antioxidant, and bactericidal properties, is incorporated into these films for the treatment of leishmaniasis, hemorrhages, skin and mucous membrane infections, dermatitis, psoriasis, and wounds [3]. The aim of this study was to prepare and investigate the mechanical properties of films composed of Soluplus (SOL) aiming the topical CO delivery.

## MATERIALS AND METHODS

**CO** (*Copaifera reticulata* Ducke) was from *Copaiba da Amazônia* (Apui, AM, Brazil) and authorized by the National System of Authorization and Information on Biodiversity (SISBIO n°. 72922-1) and the National System of Genetic Heritage Management (SISGEN n°. AE28797).

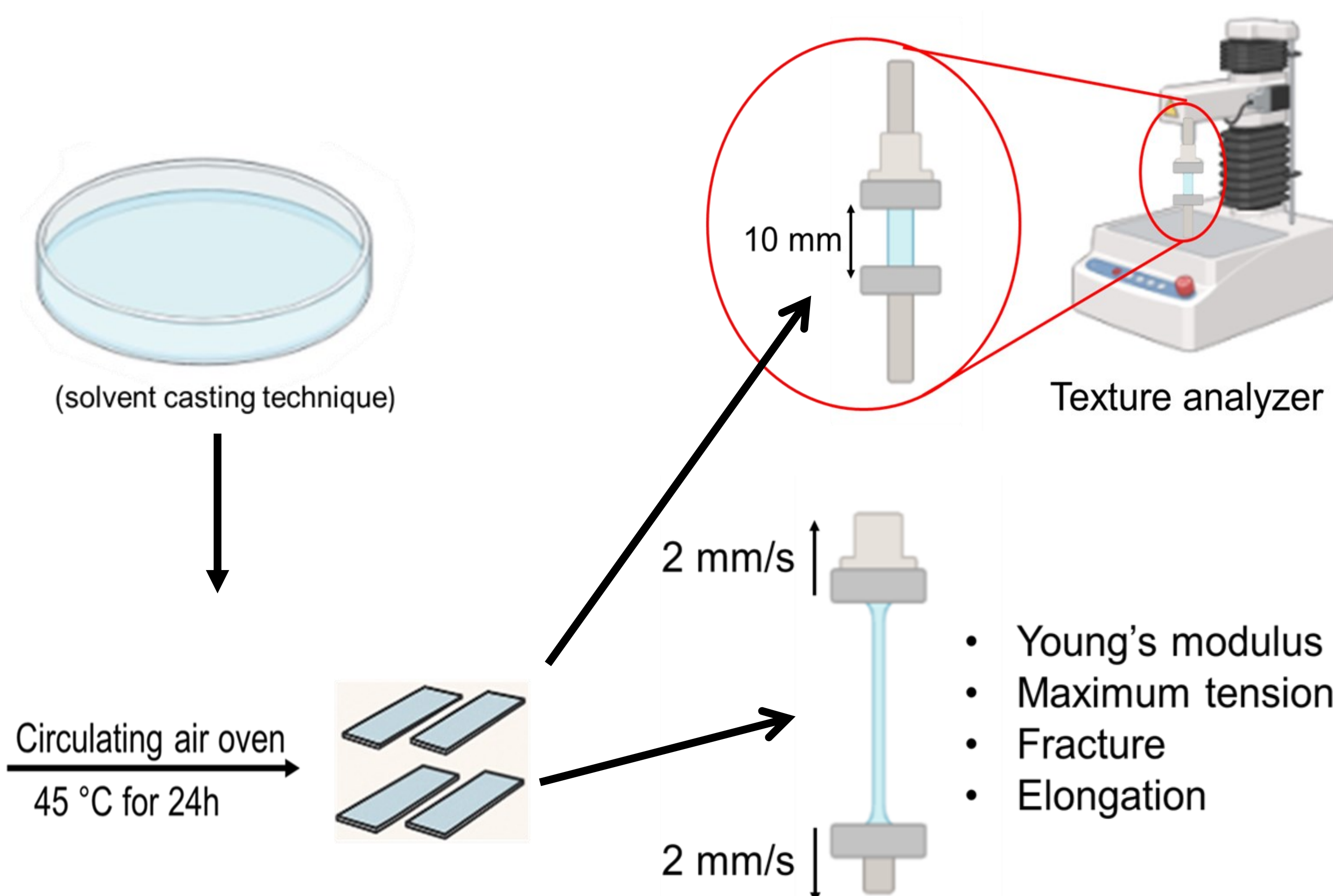
**Soluplus®** (polyvinyl caprolactam-polyvinyl acetate-polyethylene glycol graft copolymer) was from BASF (Ludwigshafen am Rhein, Germany).

**Ethanol** (96 °GL) was from Synth (Diadema, SP, Brazil).

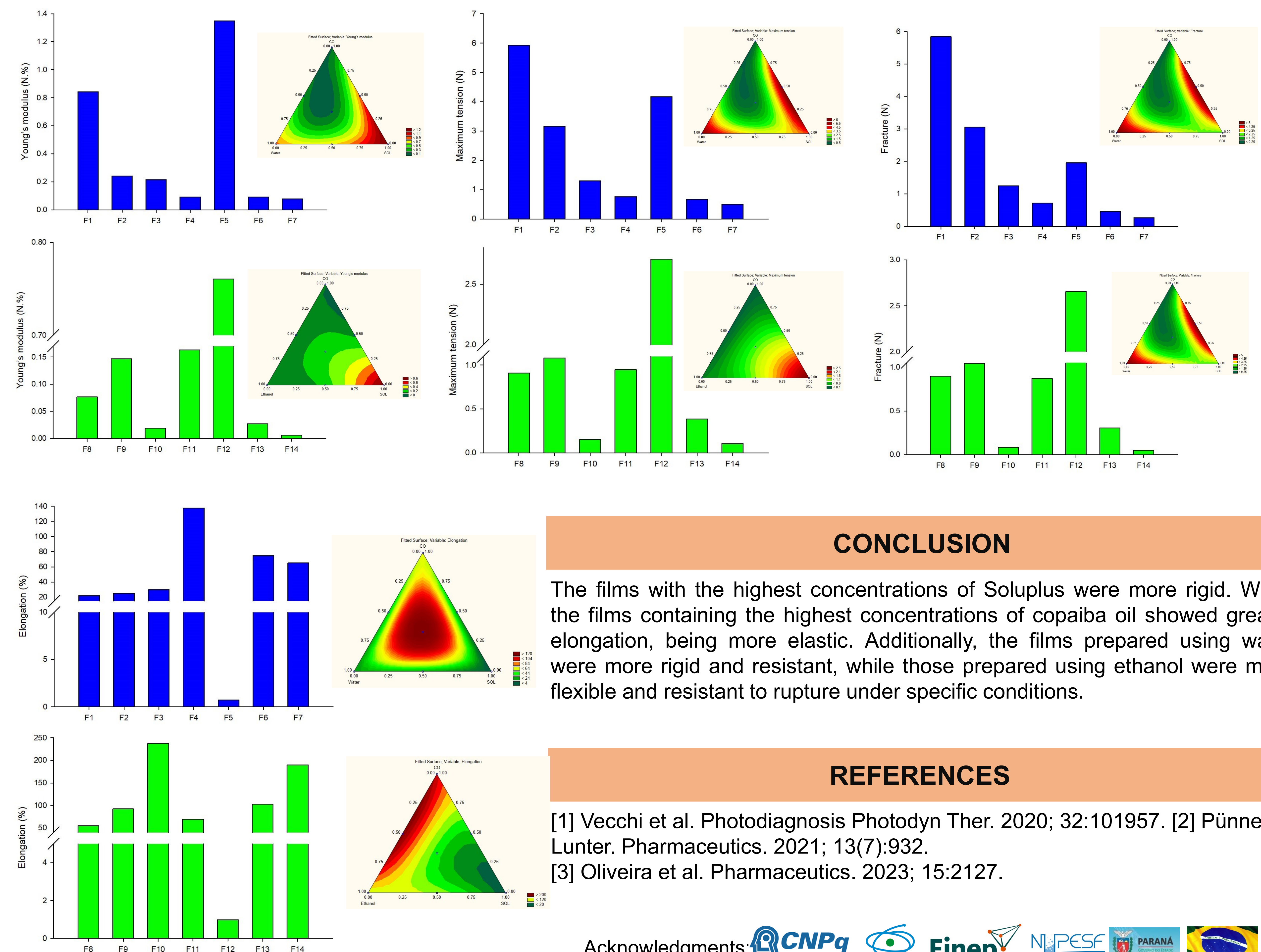
**Ultrapure water** was obtained by using a water purification system (Evoqua Water Technologies, Pittsburgh, PA, USA).

**Table 1 – Composition of film formulations.**

Formulation	Composition % (w/w)			
	Water	Ethanol	Soluplus®	CO
F1	60	-	15	25
F2	65	-	15	20
F3	65	-	10	25
F4	63.33	-	13.33	23.33
F5	60	-	20	20
F6	70	-	10	20
F7	60	-	10	30
F8	-	60	15	25
F9	-	65	15	20
F10	-	65	10	25
F11	-	63.33	13.33	23.33
F12	-	60	20	20
F13	-	70	10	20
F14	-	60	10	30



## RESULTS



## CONCLUSION

The films with the highest concentrations of Soluplus were more rigid. While the films containing the highest concentrations of copaiba oil showed greater elongation, being more elastic. Additionally, the films prepared using water were more rigid and resistant, while those prepared using ethanol were more flexible and resistant to rupture under specific conditions.

## REFERENCES

- [1] Vecchi et al. Photodiagnosis Photodyn Ther. 2020; 32:101957. [2] Pünnel & Lunter. Pharmaceutics. 2021; 13(7):932.
- [3] Oliveira et al. Pharmaceutics. 2023; 15:2127.