

# EDIBLE FILMS BASED ON WHEY PROTEIN ISOLATE AND TARRAGON ESSENTIAL OIL: FORMULATION AND CHARACTERISATION

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## ABSTRACT

In recent years, research has focused on the development of edible films and coatings with antimicrobial activity to control microorganisms that can cause food spoilage or food poisoning. Essential oils are among the active agents used to enhance the functionality of edible films.

The aim of this work was the comparative characterization of whey protein isolate (WPI)-based edible films obtained from untreated (UNT) and heat-treated (HT) film-forming solutions with different levels of incorporated tarragon essential oil (0.5, 1.0, 1.5, 2.0, and 2.5%, w/w).

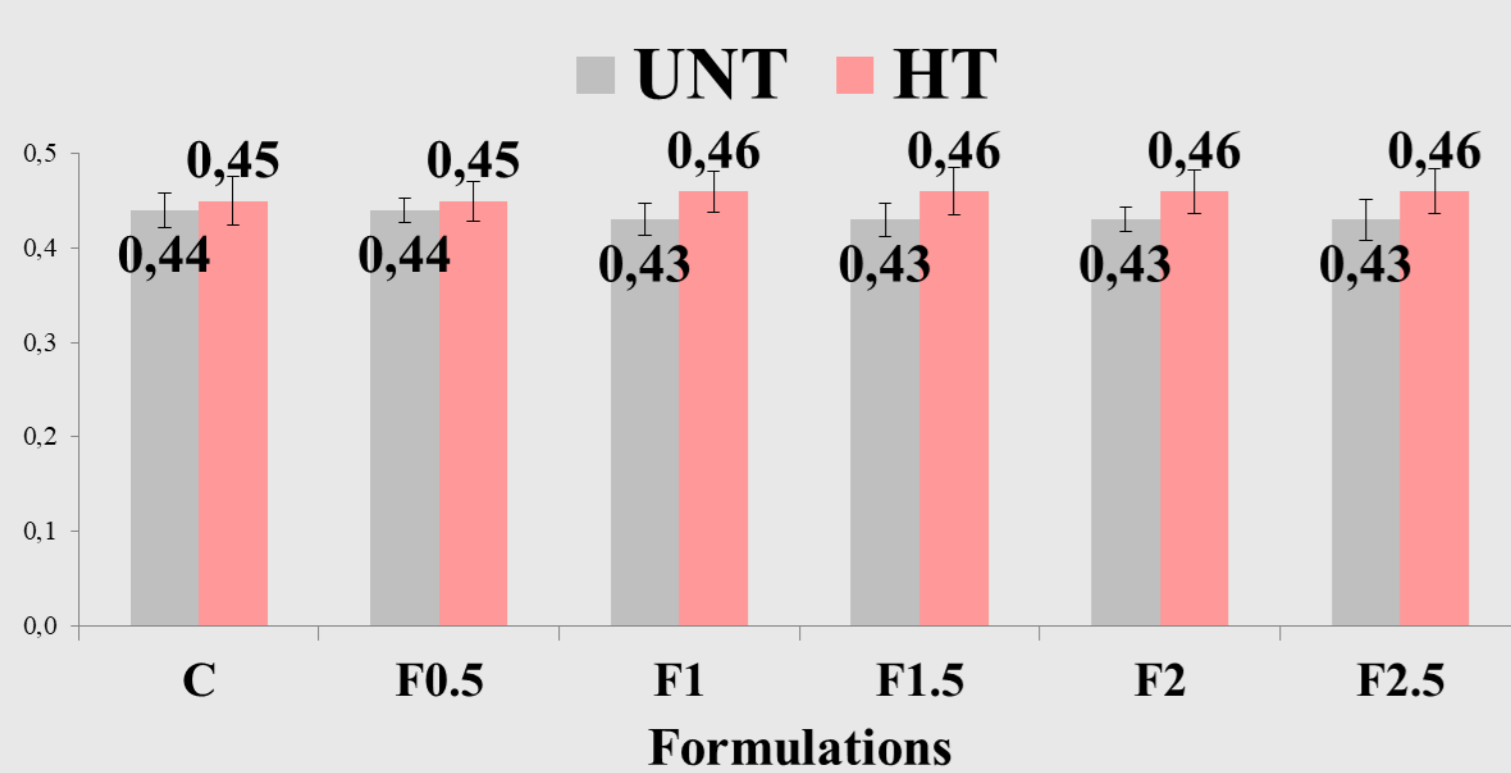
Heat-treatment of the film-forming solution caused increases in thickness, moisture content, swelling degree, water vapor permeability (WVP) and puncture resistance of the film, but decreases in water solubility and puncture deformation.

## DESIGN

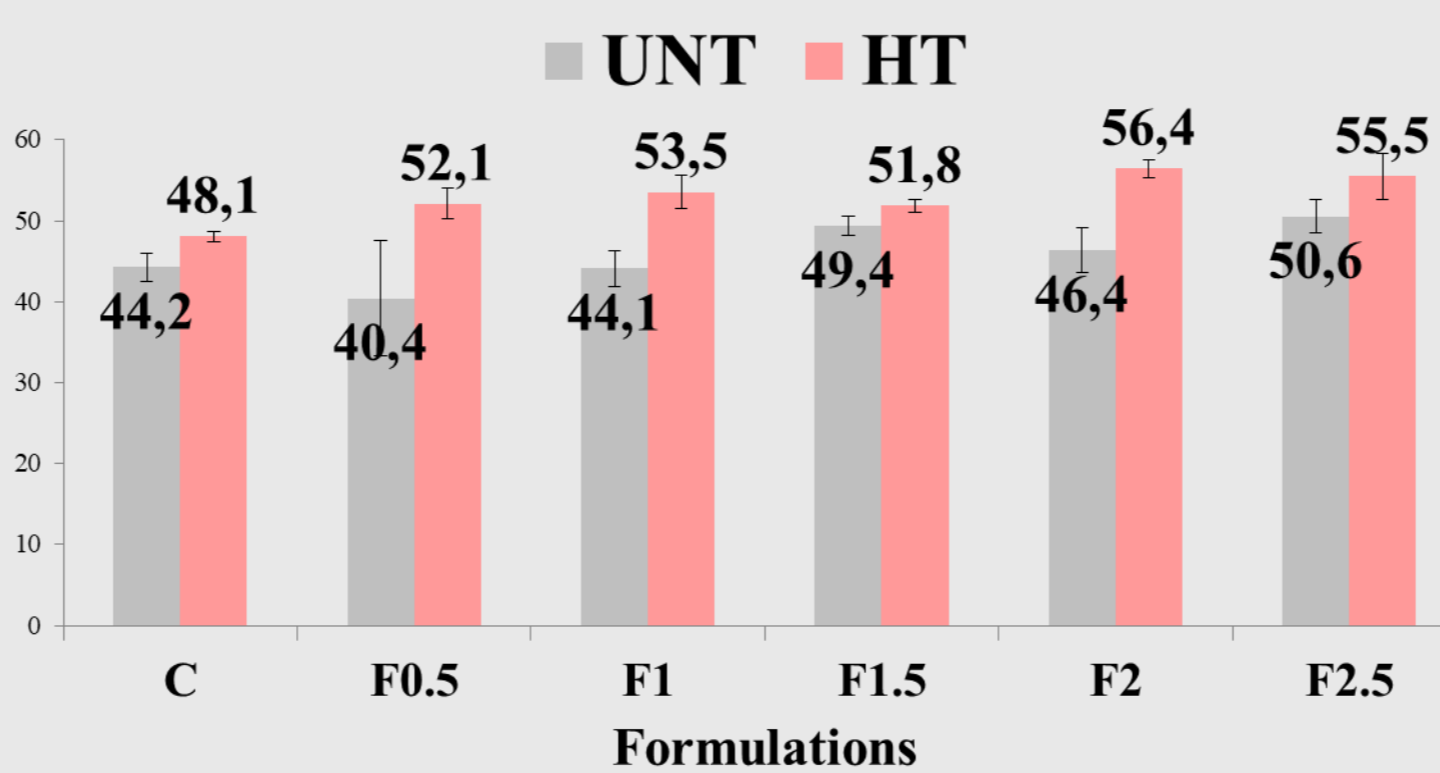


## RESULTS

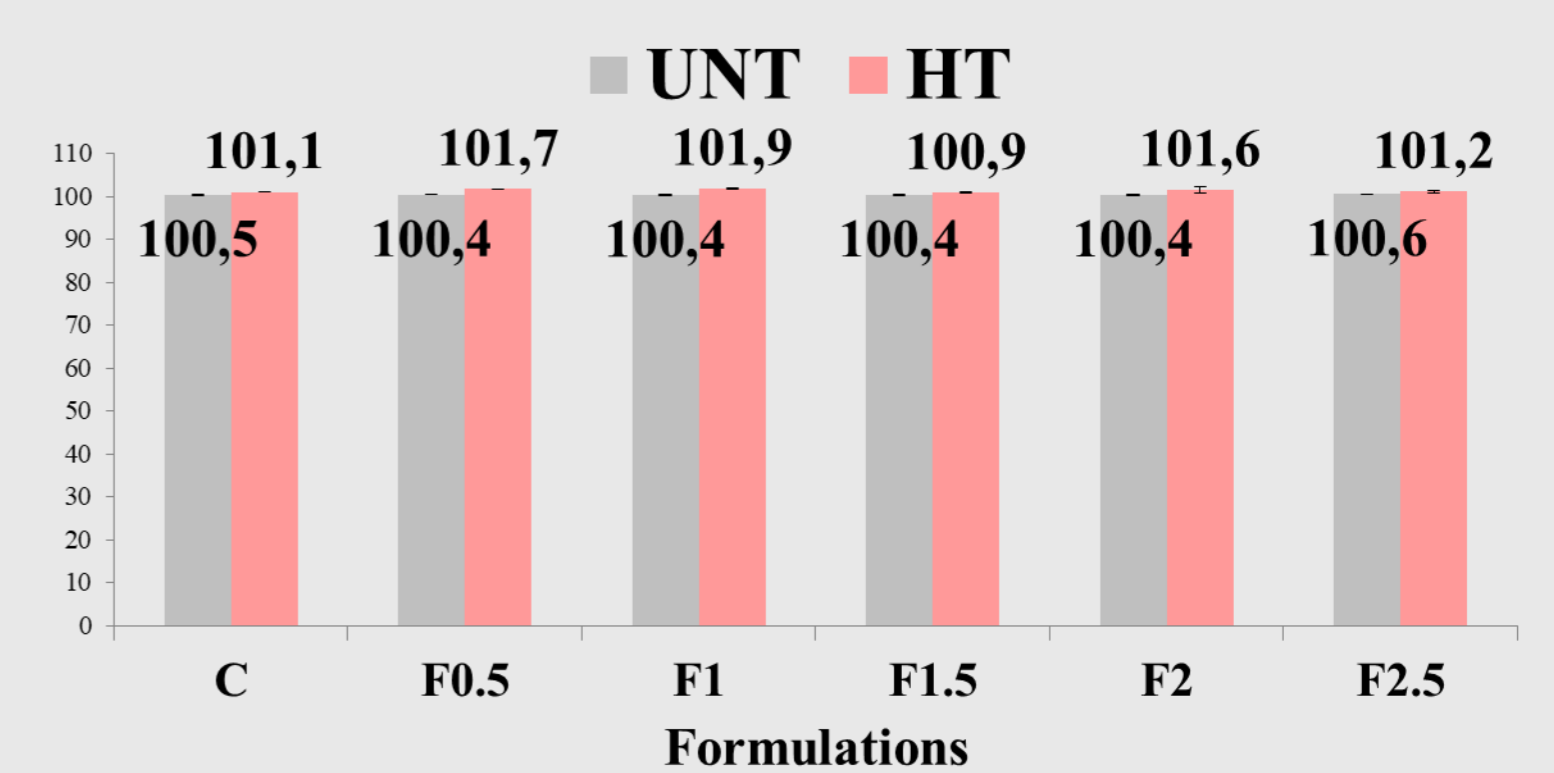
### Thickness



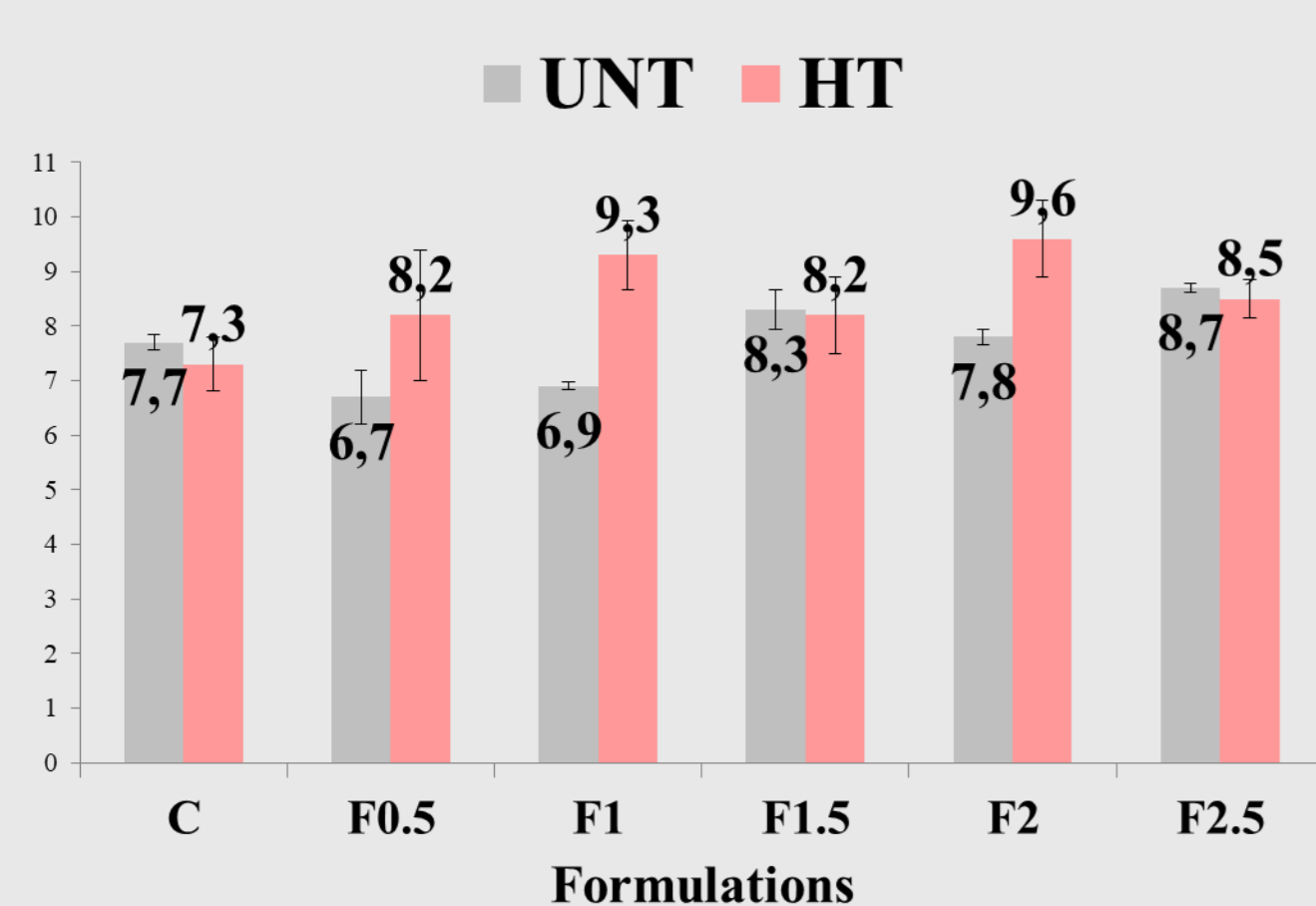
### Moisture Content (%)



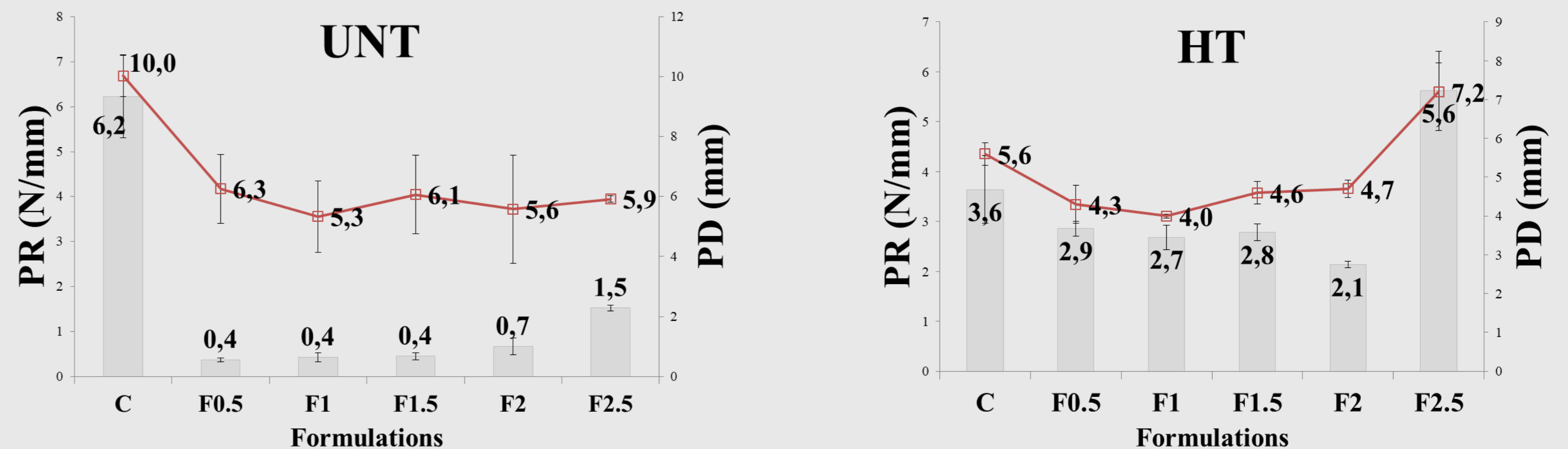
### Swelling Degree (%)



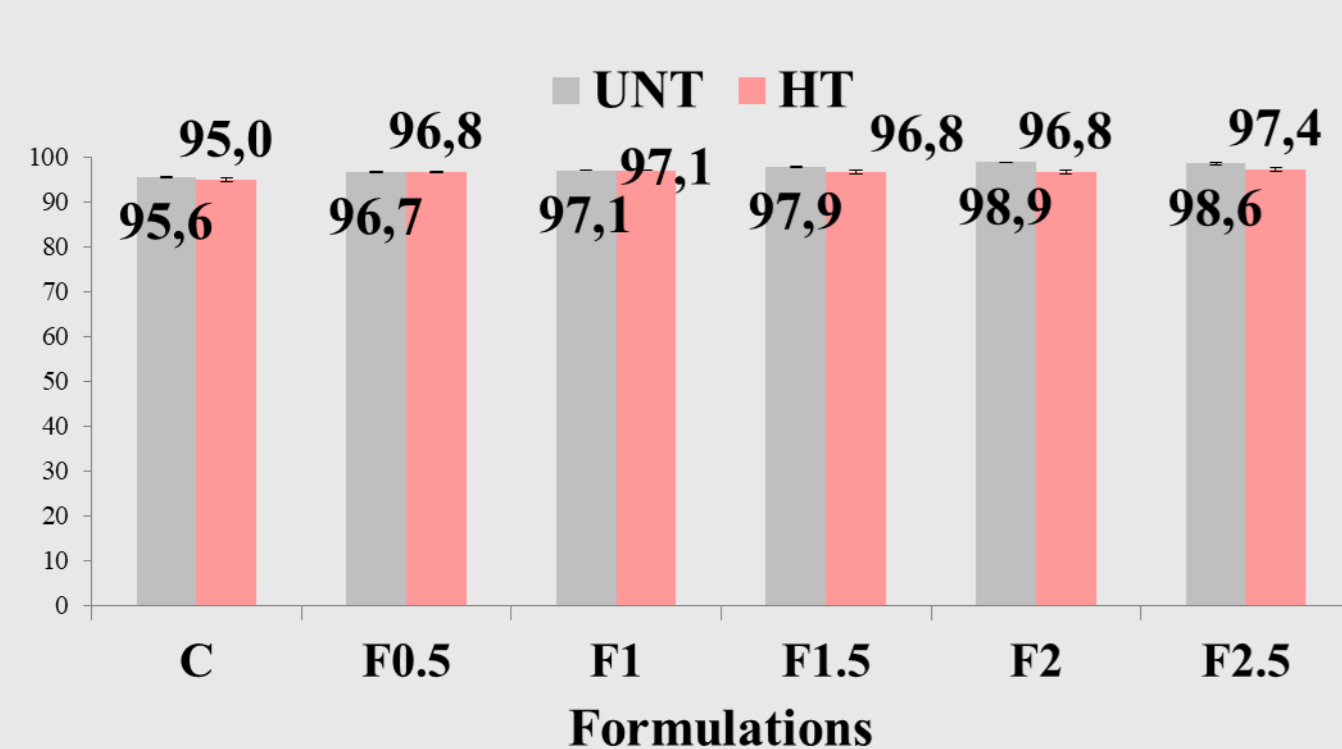
### WVP (g/m<sup>2</sup>·s)



### Puncture Resistance and Puncture deformation



### Solubility in Water (%)



## CONCLUSIONS

HT film:

- showed improved physical properties
- is less soluble in water
- is more resistant to mechanical penetration.

✓ **Therefore, it is more suitable for certain end-use applications.**

