



PROCESSING EFFECTS ON RESISTANT STARCH FORMATION AND SHELF LIFE OF TORTILLAS

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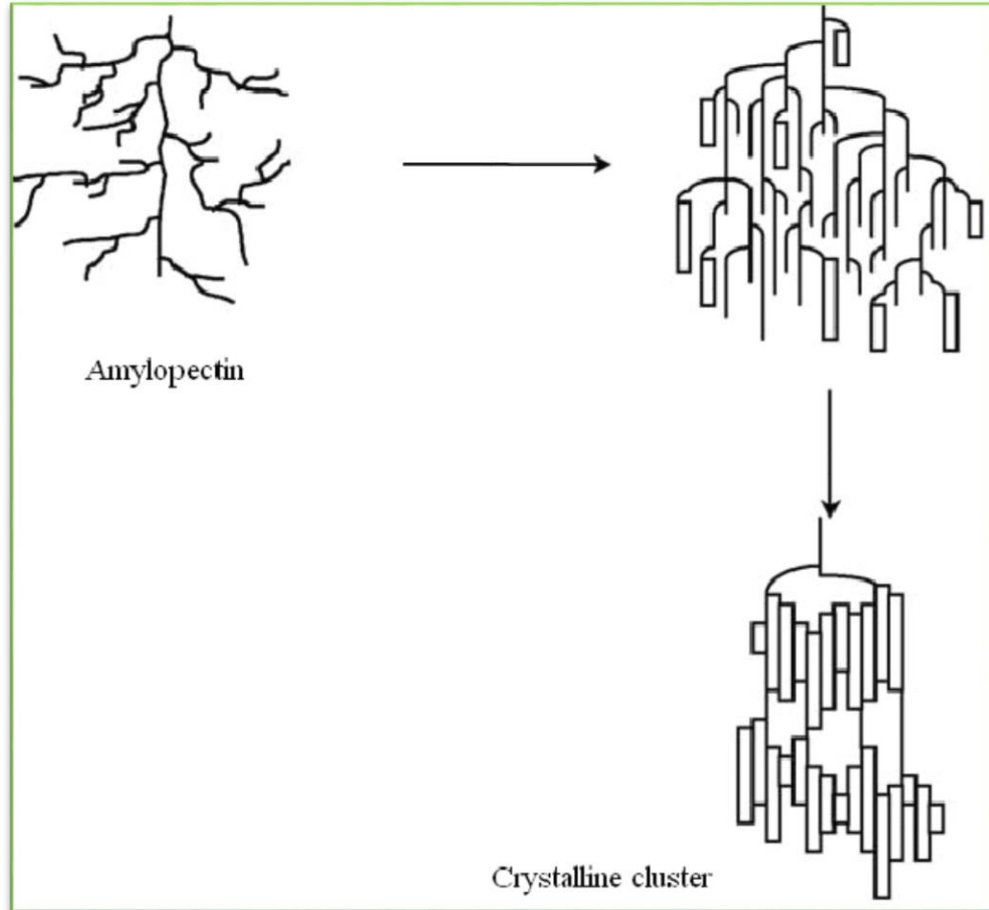
Tortillas



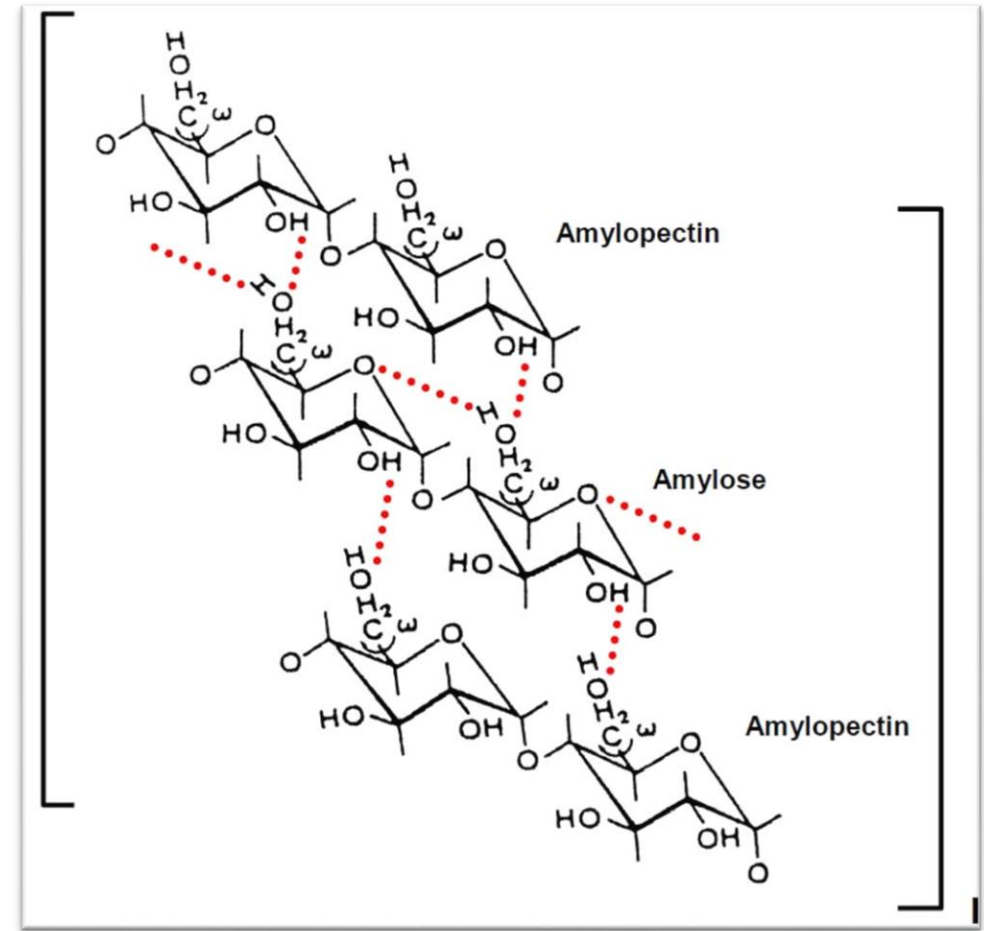
Negative quality characteristics

- Hardness
- Loss of rolability
- Organoleptic changes

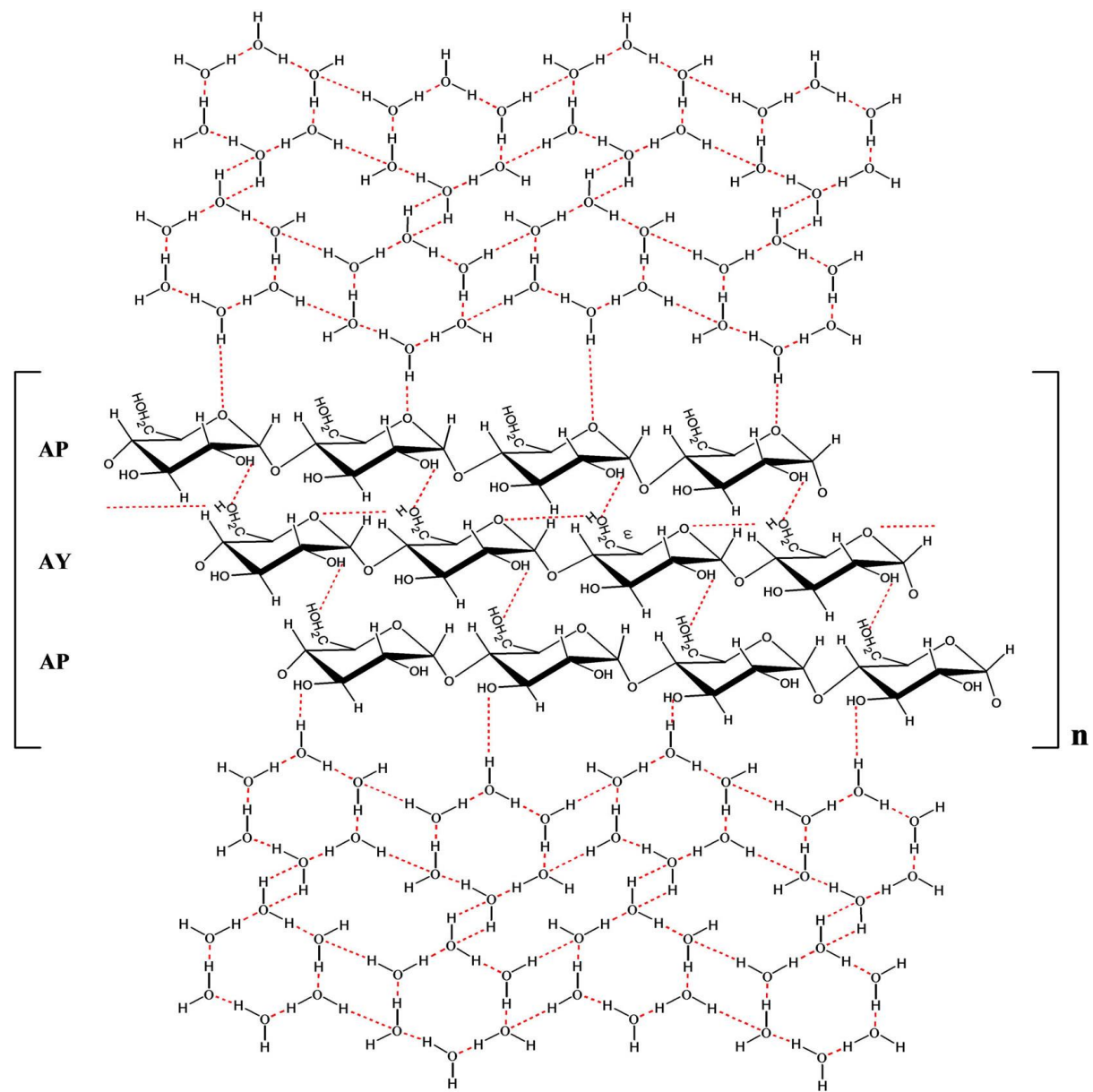
Amylopectin retrogradation



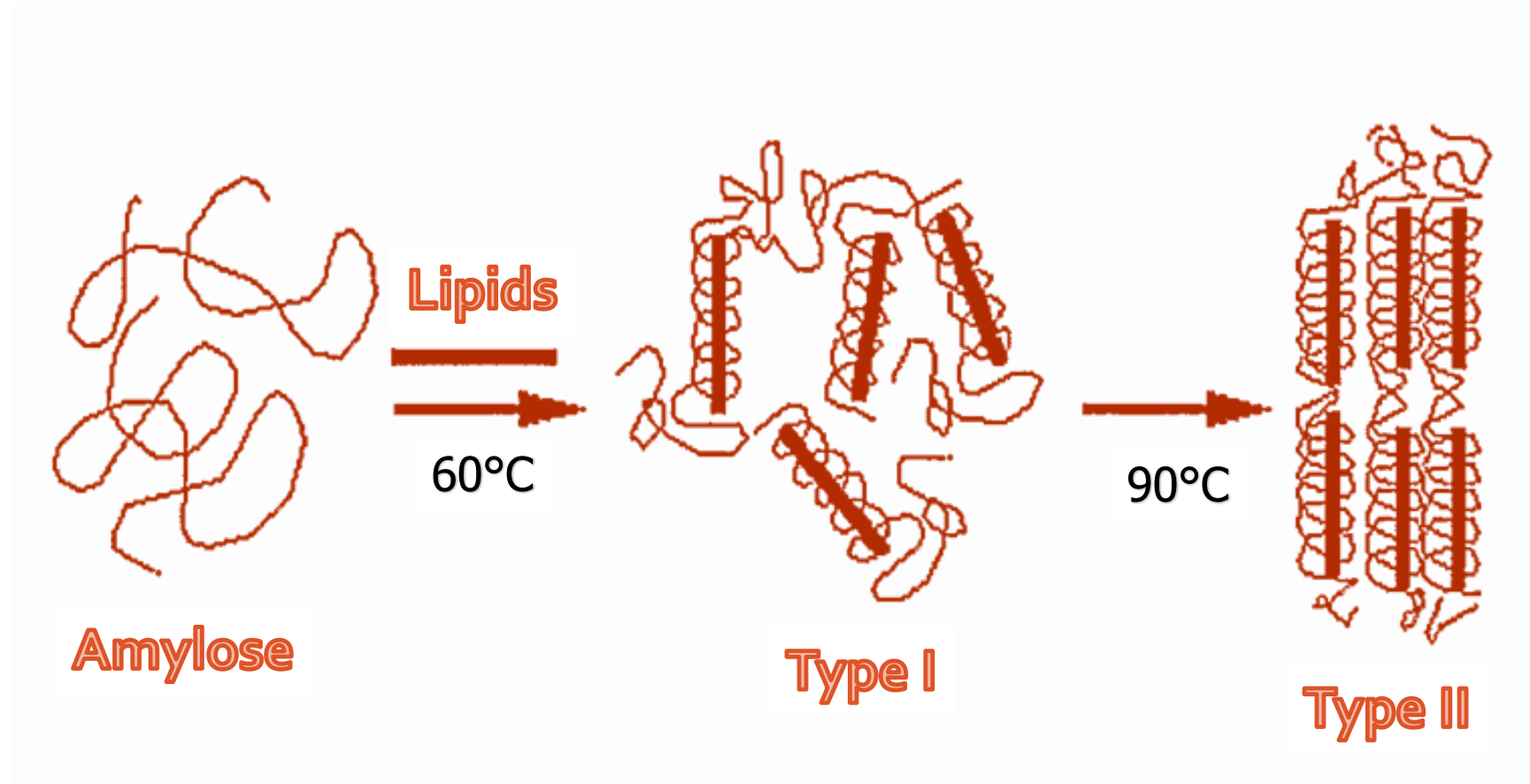
Deville et al., 2003



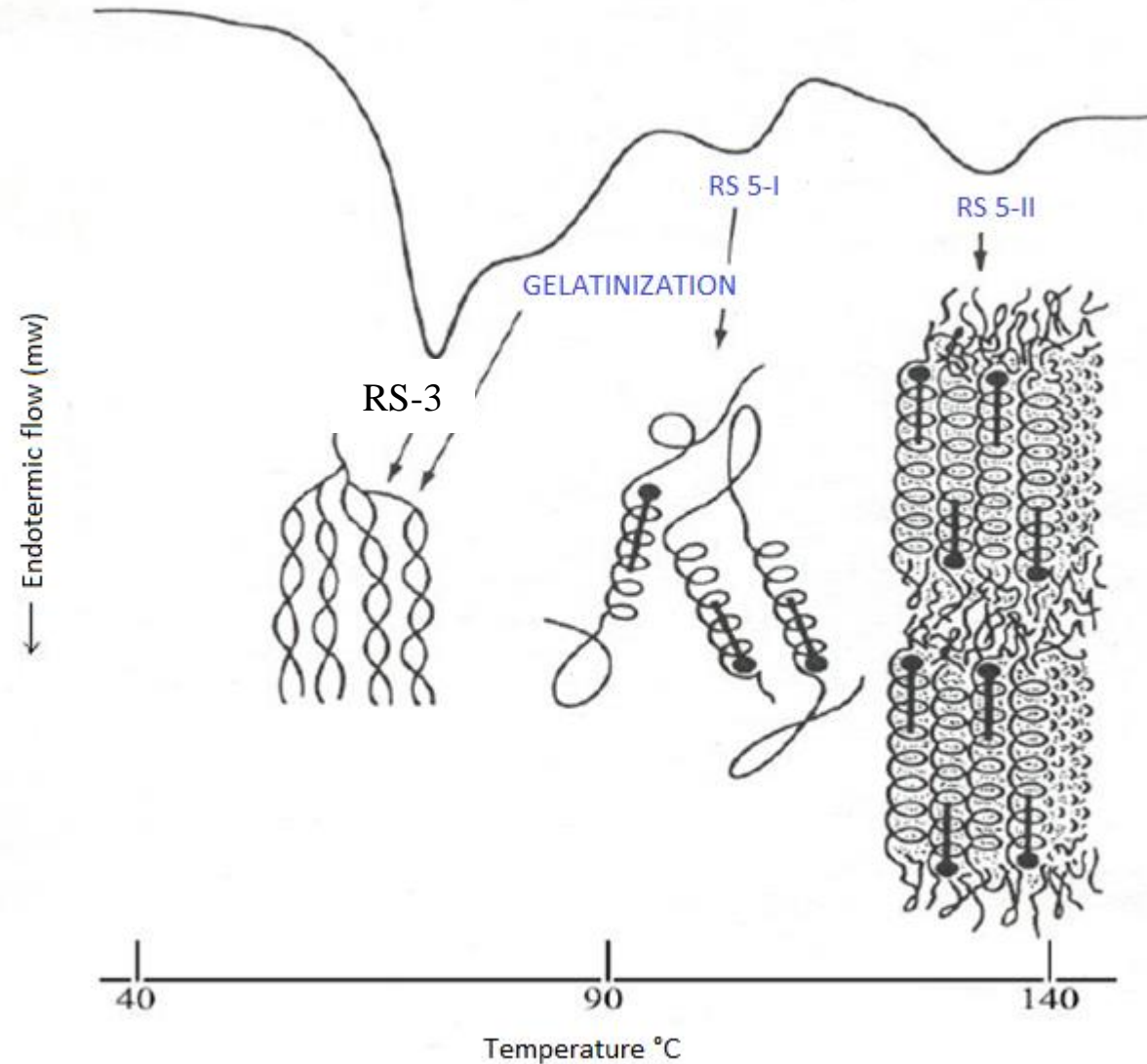
Tako et al., 2014



Amylose-lipid complexes I and II (RS-5 I and II)



Resistant starch formation (Type 3 and 5) on nixtamalized products



Objective

- Evaluation of Resistant starch formation on tortillas under frozen conditions and their impact on quality properties



Methodology

Nixtamalized Flours

- Commercial maize
- $\text{Ca}(\text{OH})_2$ al 1%



Tortillas elaboration

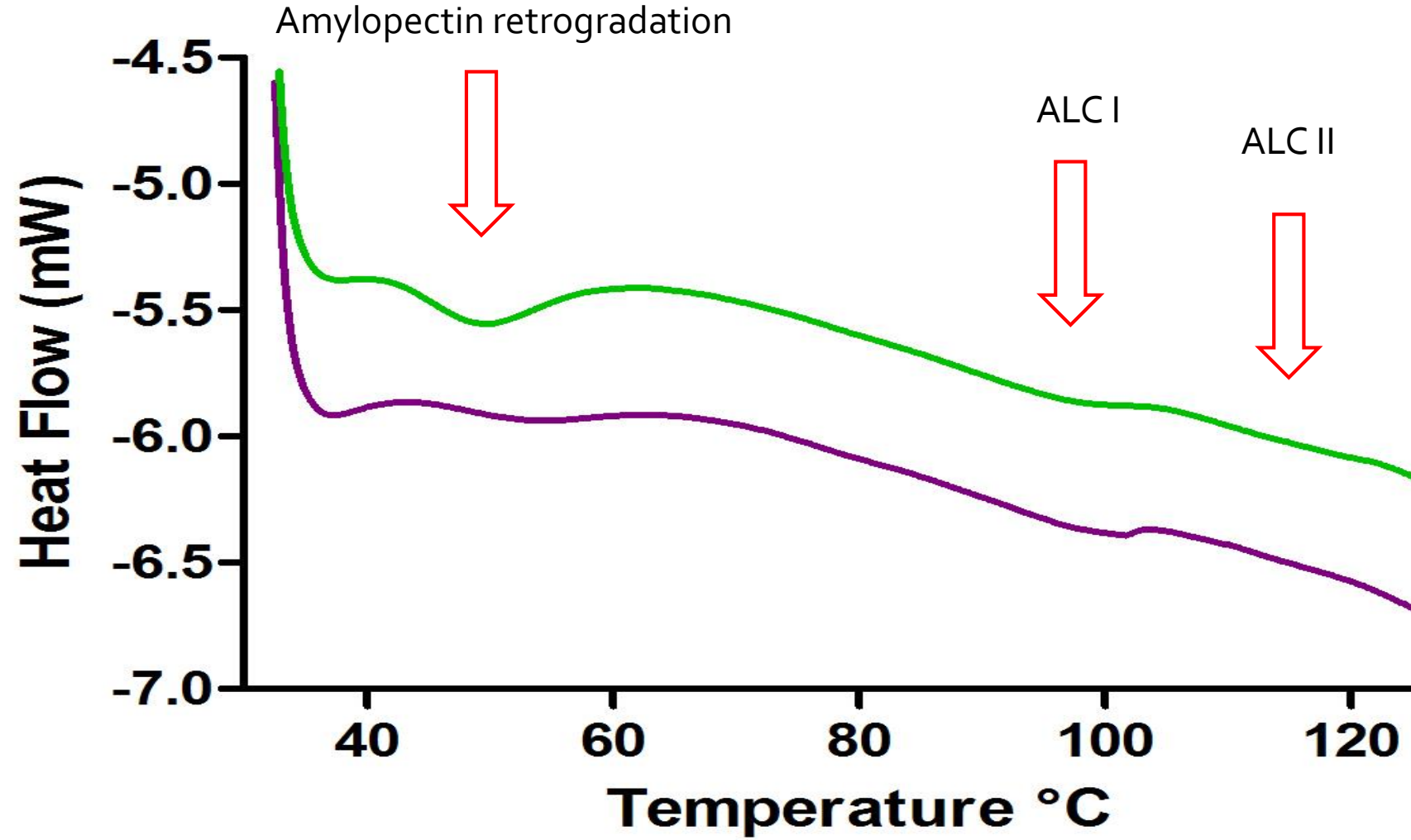
- Nixtamalized flour + water + palmitic acid (0%, 1% y 1.5%)



Tortillas characterization at 0, 7, 14 days

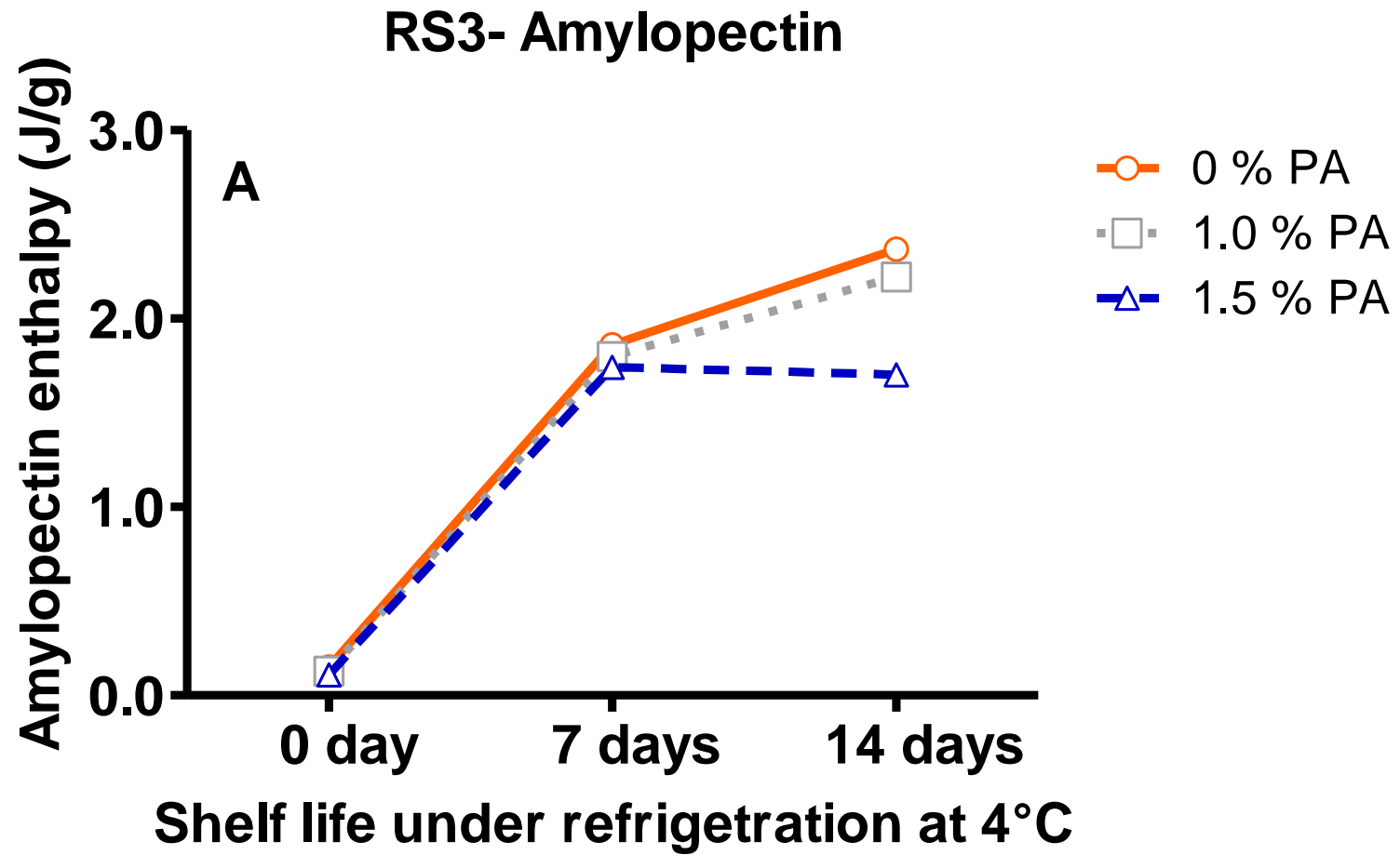
RESULTS





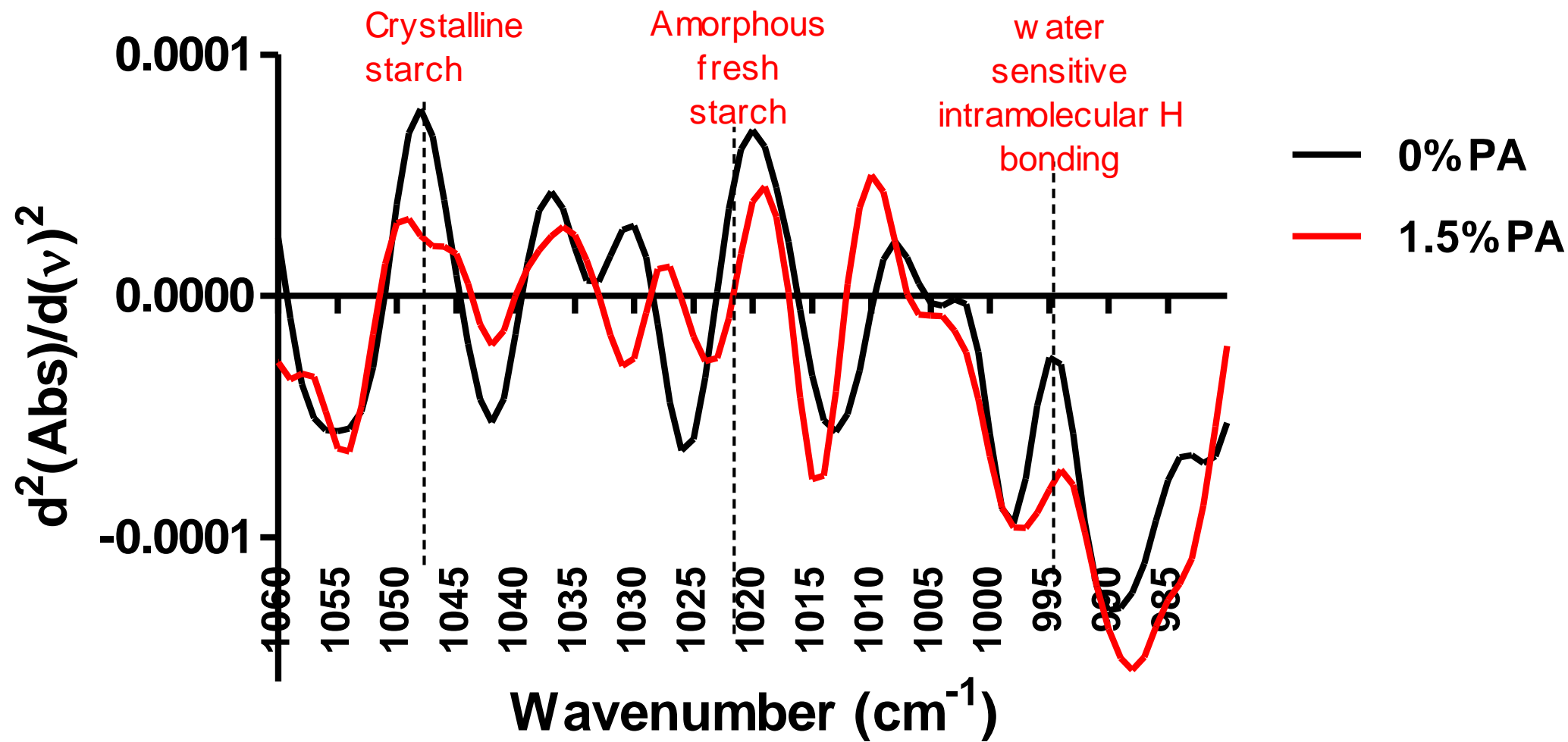
Thermal Analysis

Thermal Analysis

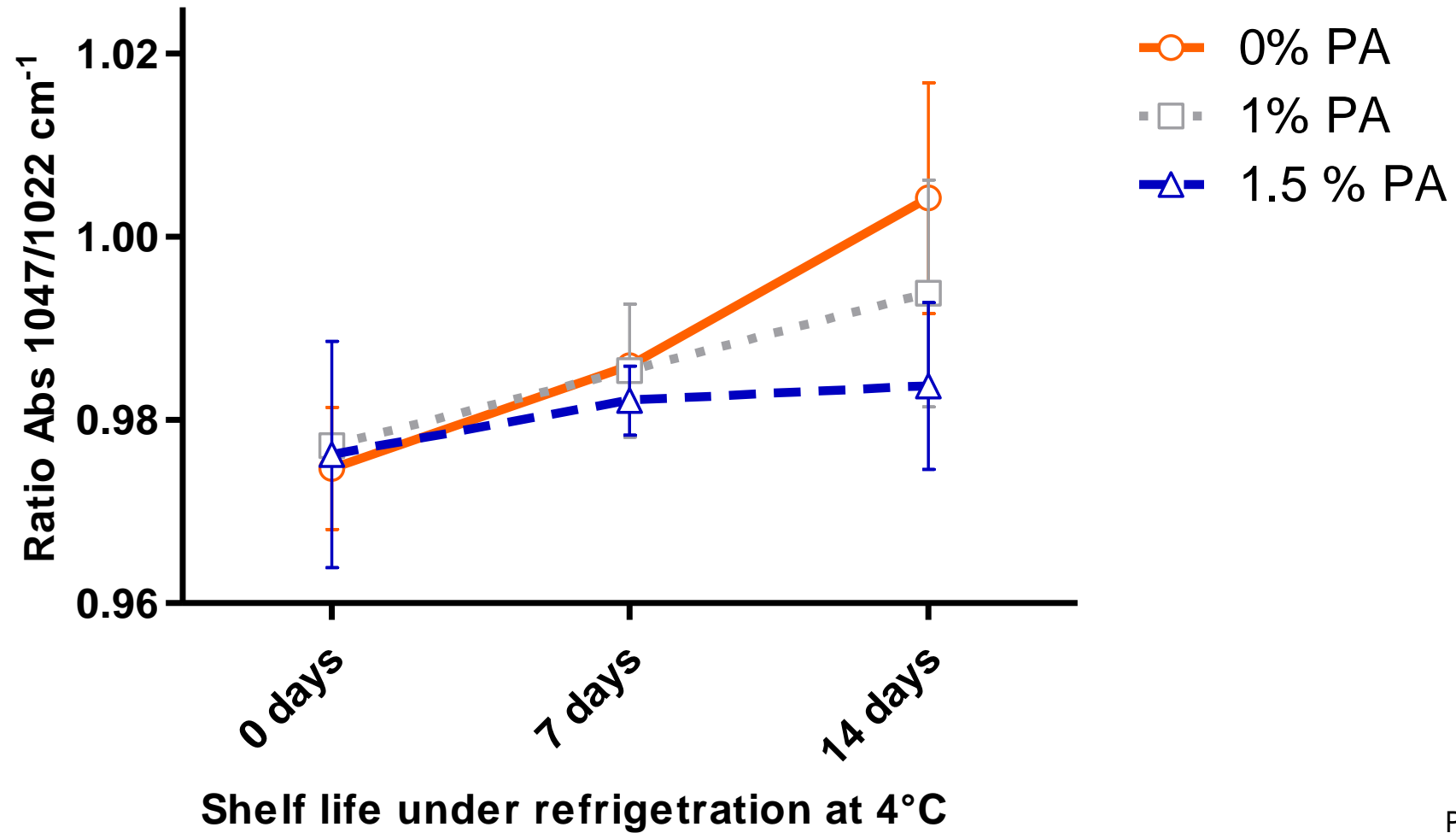


PA: Palmitic acid

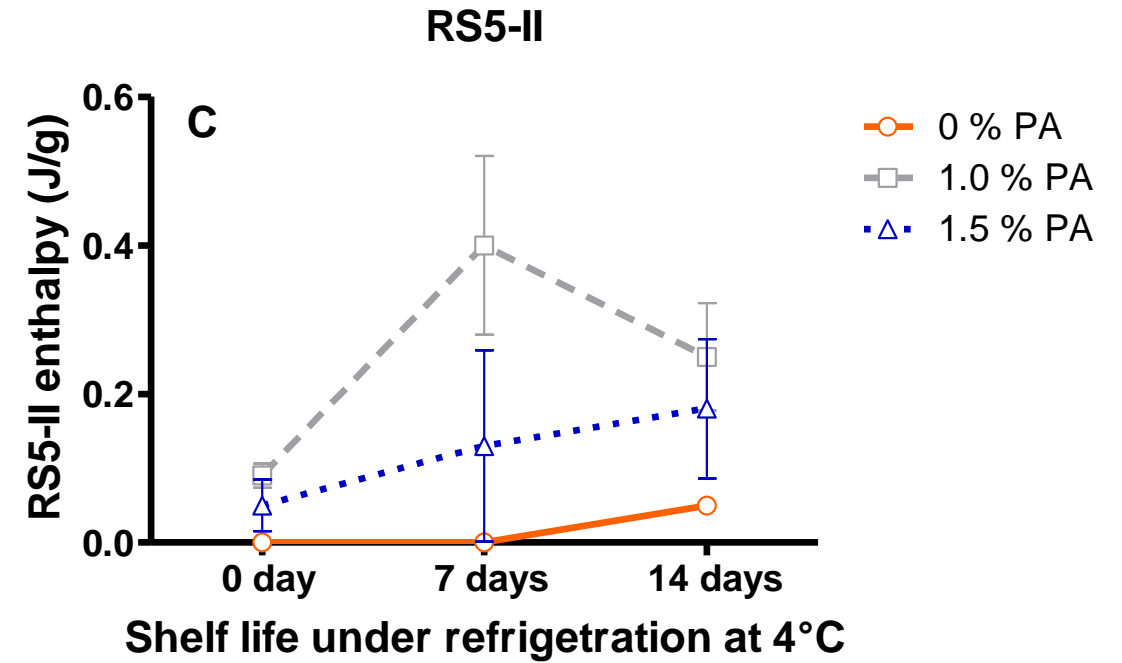
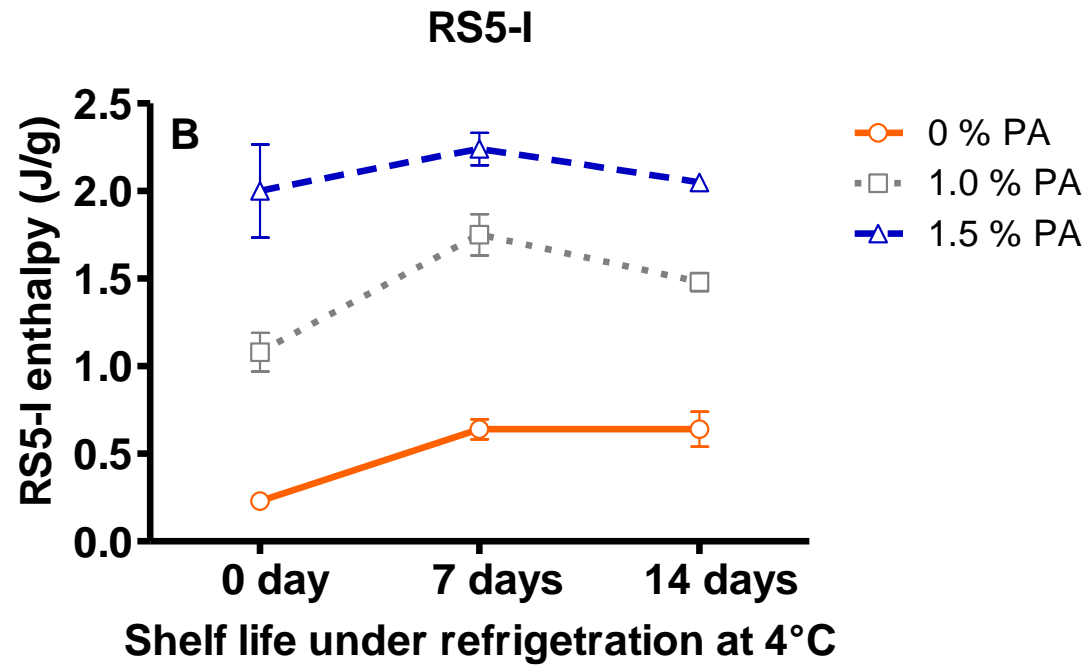
ATR-FT-IR spectra of starch 2nd derivative at Day 0



FTIR-Ratios

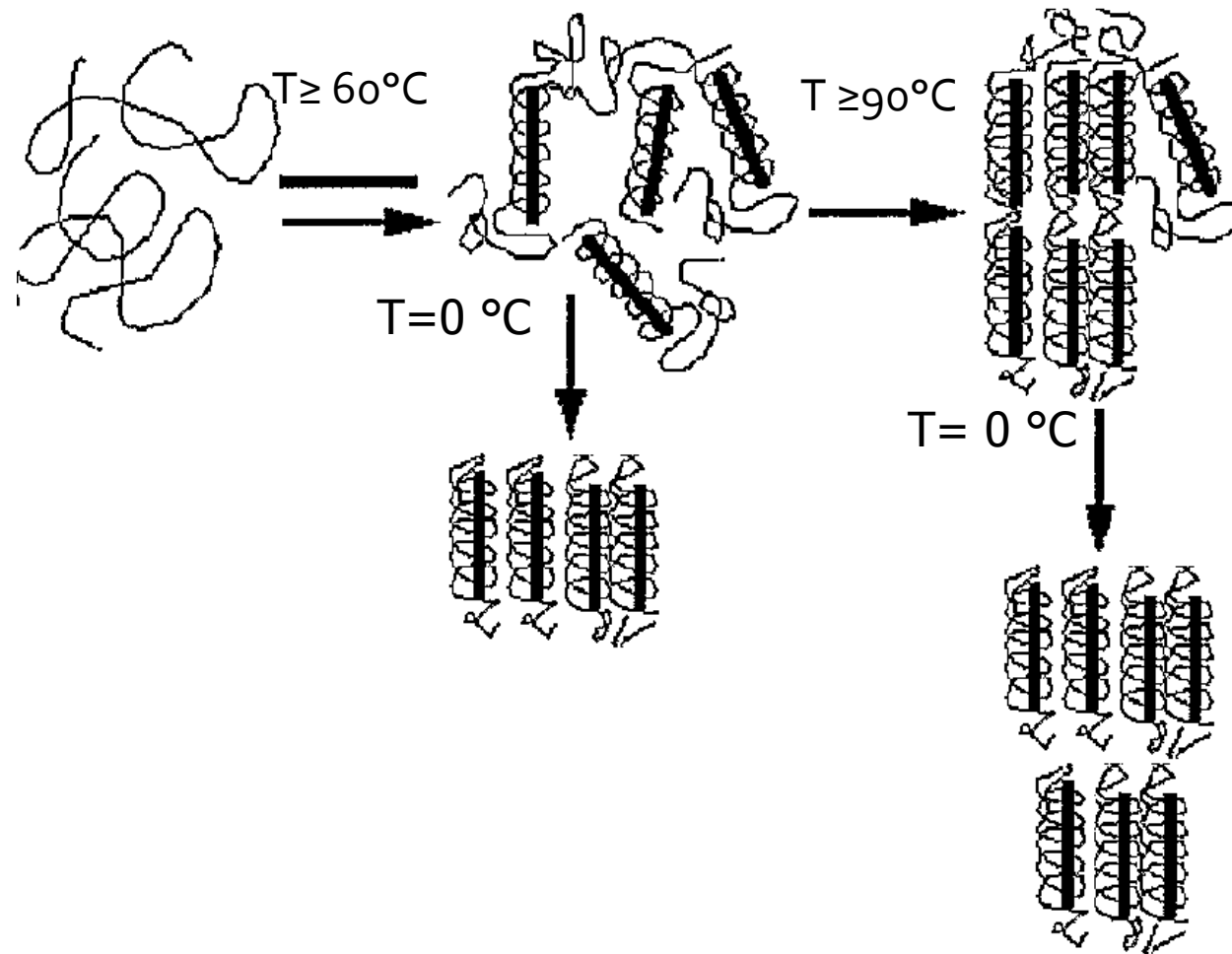


Thermal Analysis

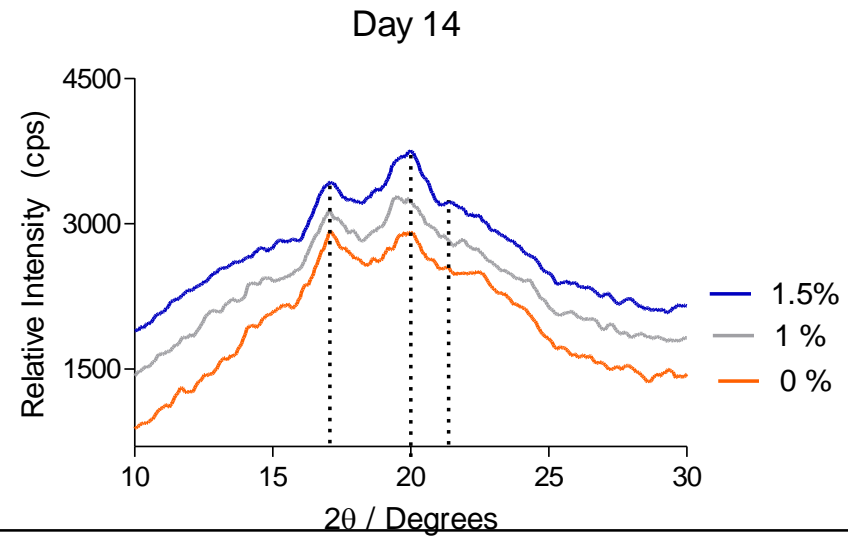
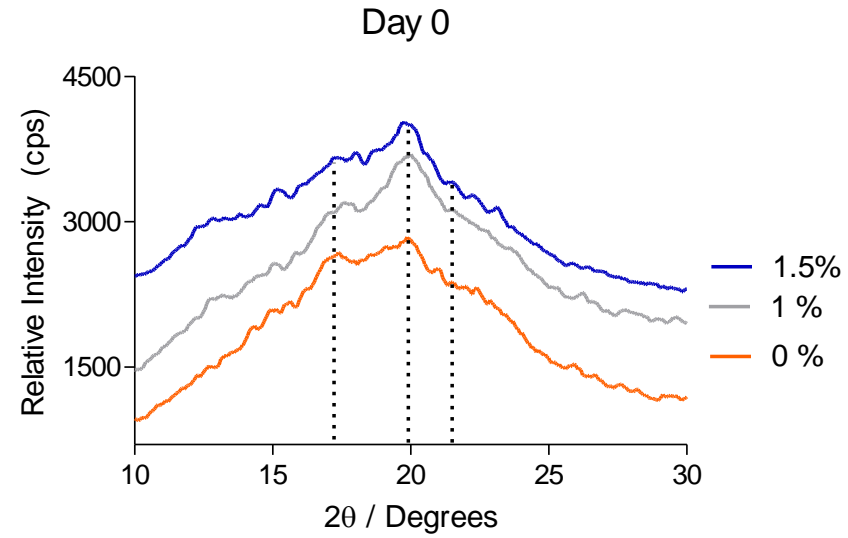


PA: Palmitic acid

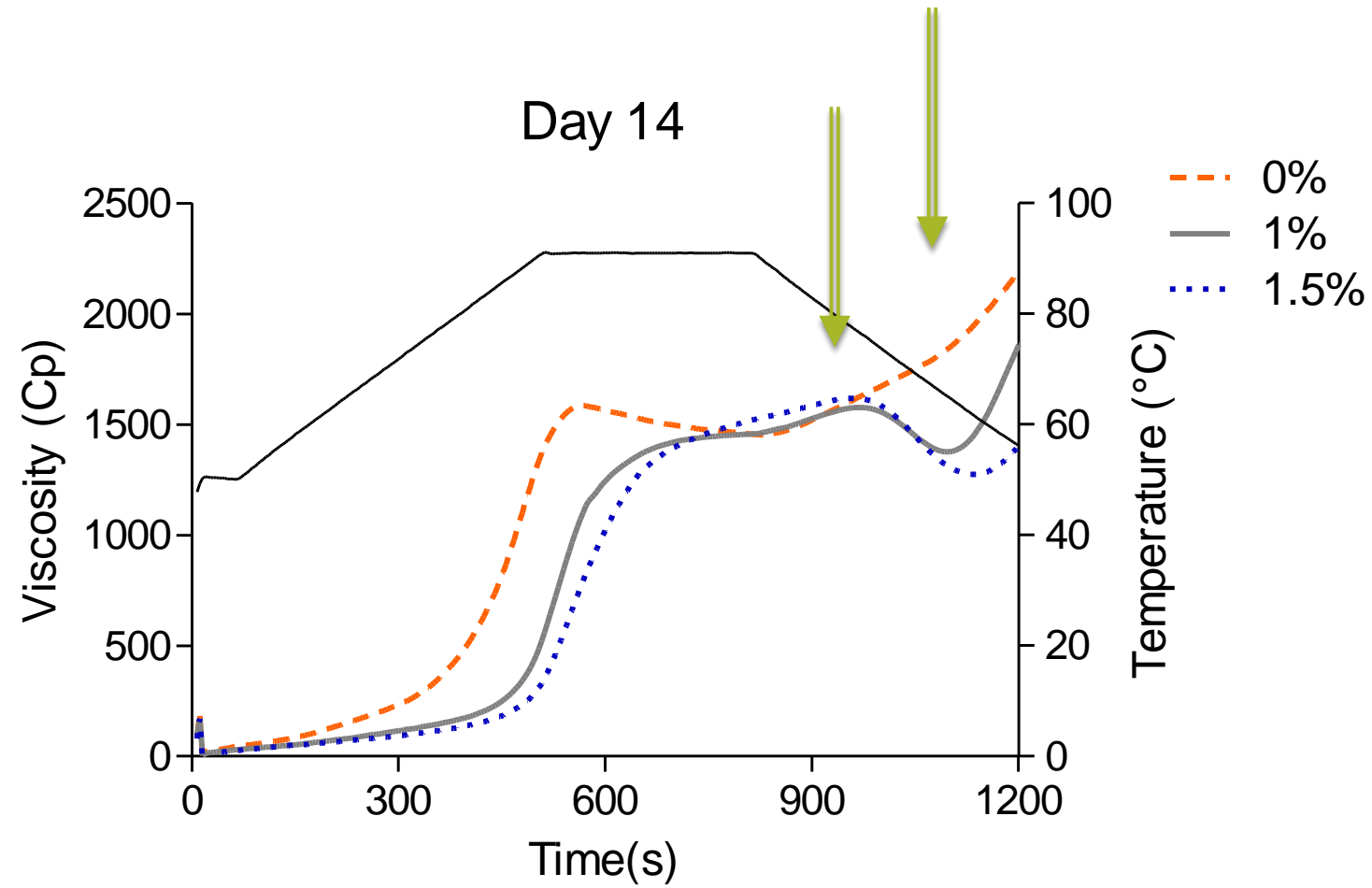
Amylose lipid complexes I y II (RS 5-I and II)



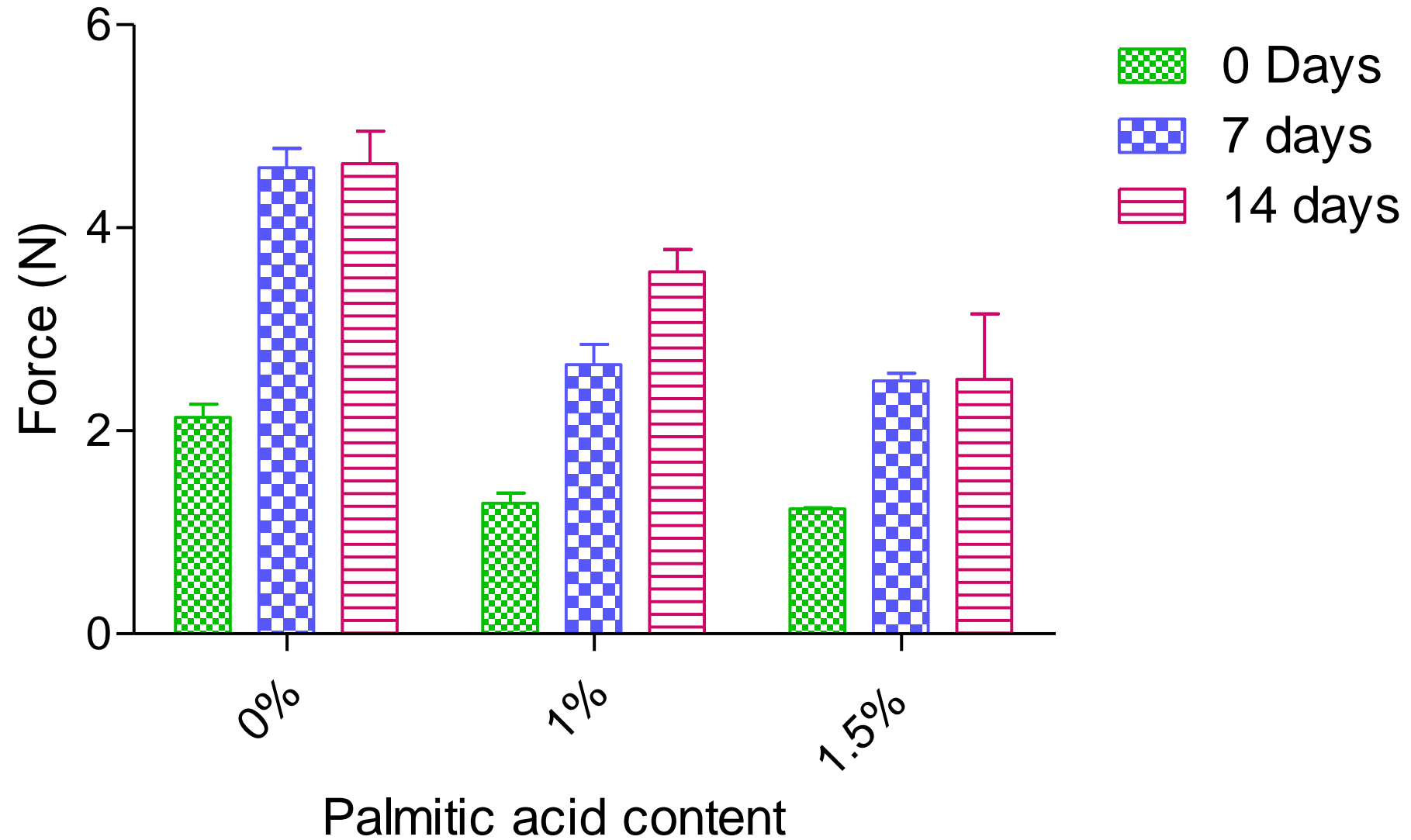
X-ray diffraction



Pasting properties



Texture



Highlights

PA addition increases formation of RS -5

PA addition is an alternative to increase shelf life of tortillas

RS -5 or ALC are reorganized when they are at frozen storage conditions

ALC avoid amylopectin retrogradation

Thank you for
your time
and attention