

# LETTUCE DISINFECTION WITH PERACETIC ACID AND ITS SYNERGY WITH LACTIC ACID

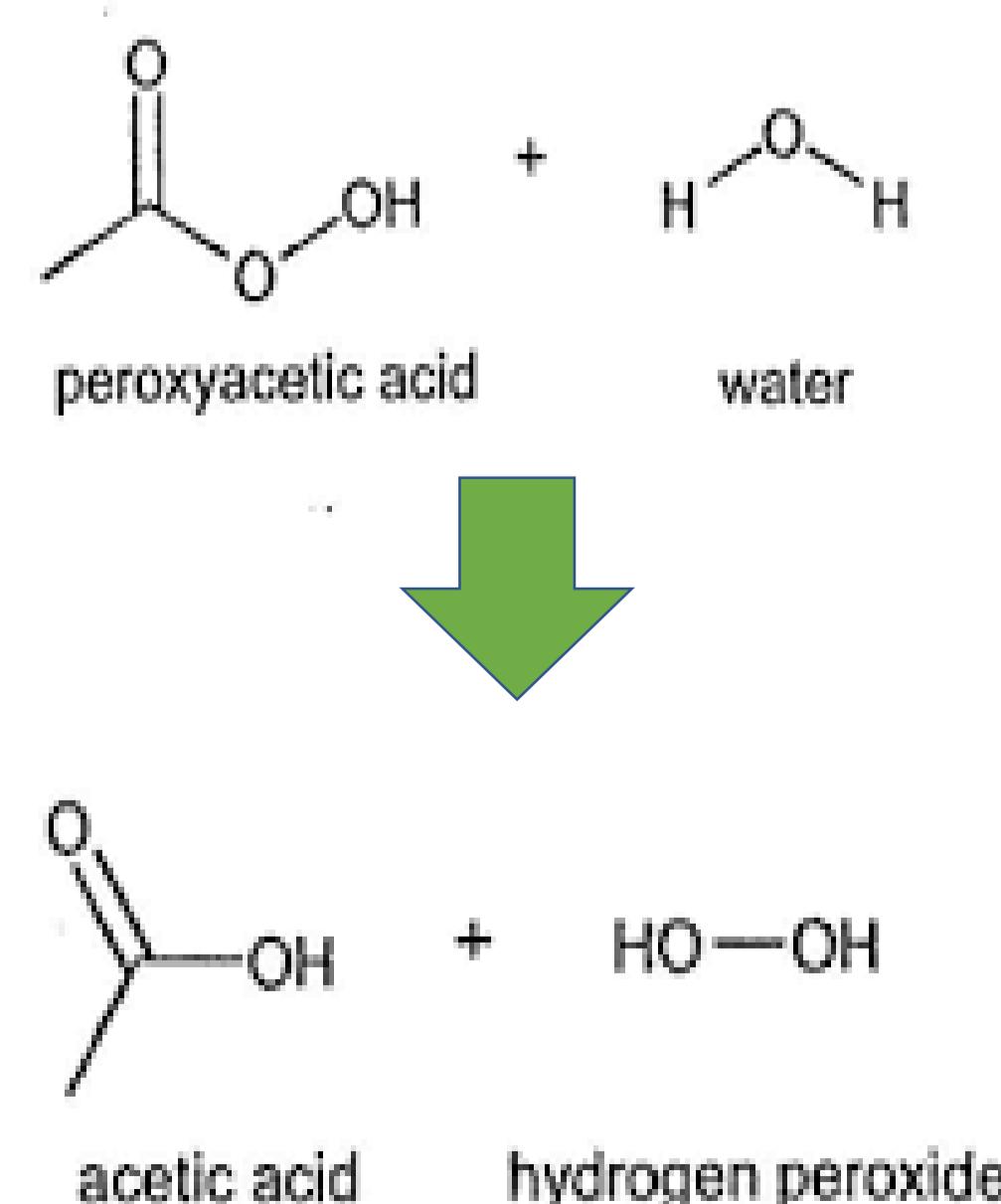
Lluís Gifra Prieto Final Degree Project – June 2021

## Objectives

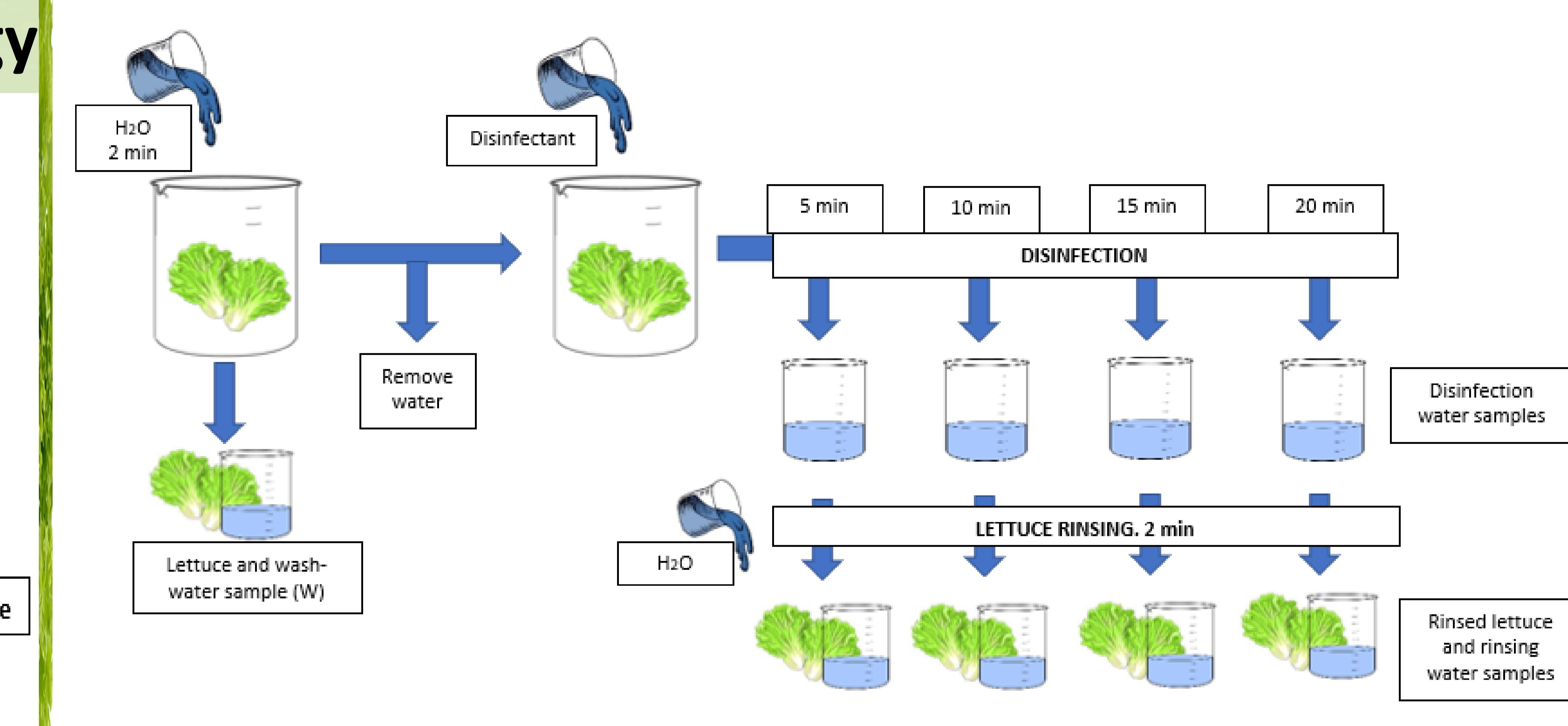
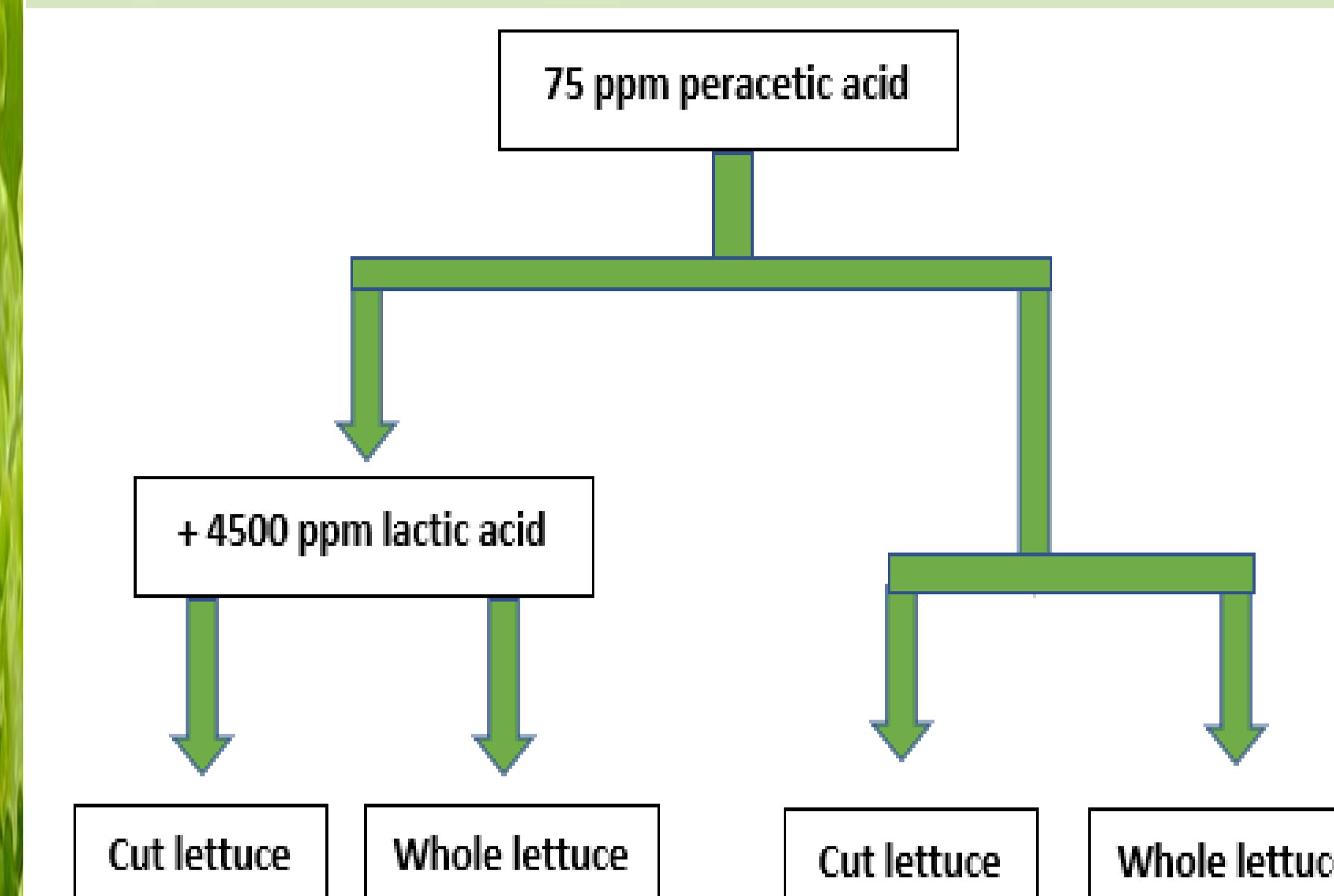
- To test the effectiveness of peracetic acid and its synergy with lactic acid as disinfectants in lettuce.
- To test the effectiveness in whole or cut lettuce.

## Context

- The use of chlorine in industry is being evaluated in the European Union as its use causes toxic byproducts and its effect decays in the presence of organic matter.
- As a possible solution, new methods of disinfection are being studied to replace chlorine.
- Peracetic acid is an organic acid which doesn't produce harmful byproducts and is has a high stability in presence of organic matter.
- Its use as food disinfectant is still being tested, despite having its use approved by the FDA.



## Materials and methodology



## Results

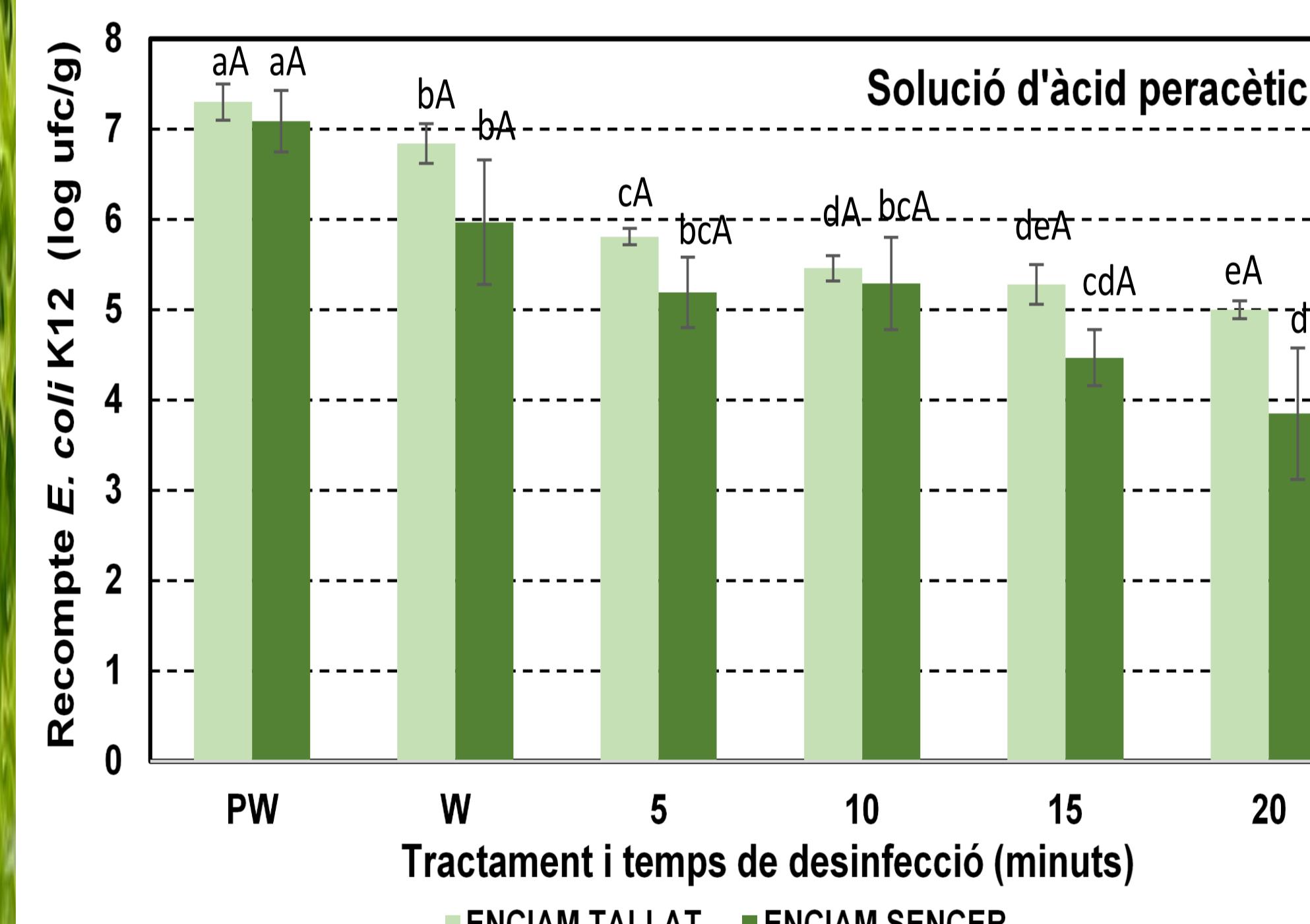


Table 1: Effect of peracetic acid (75 ppm) in lettuce disinfection

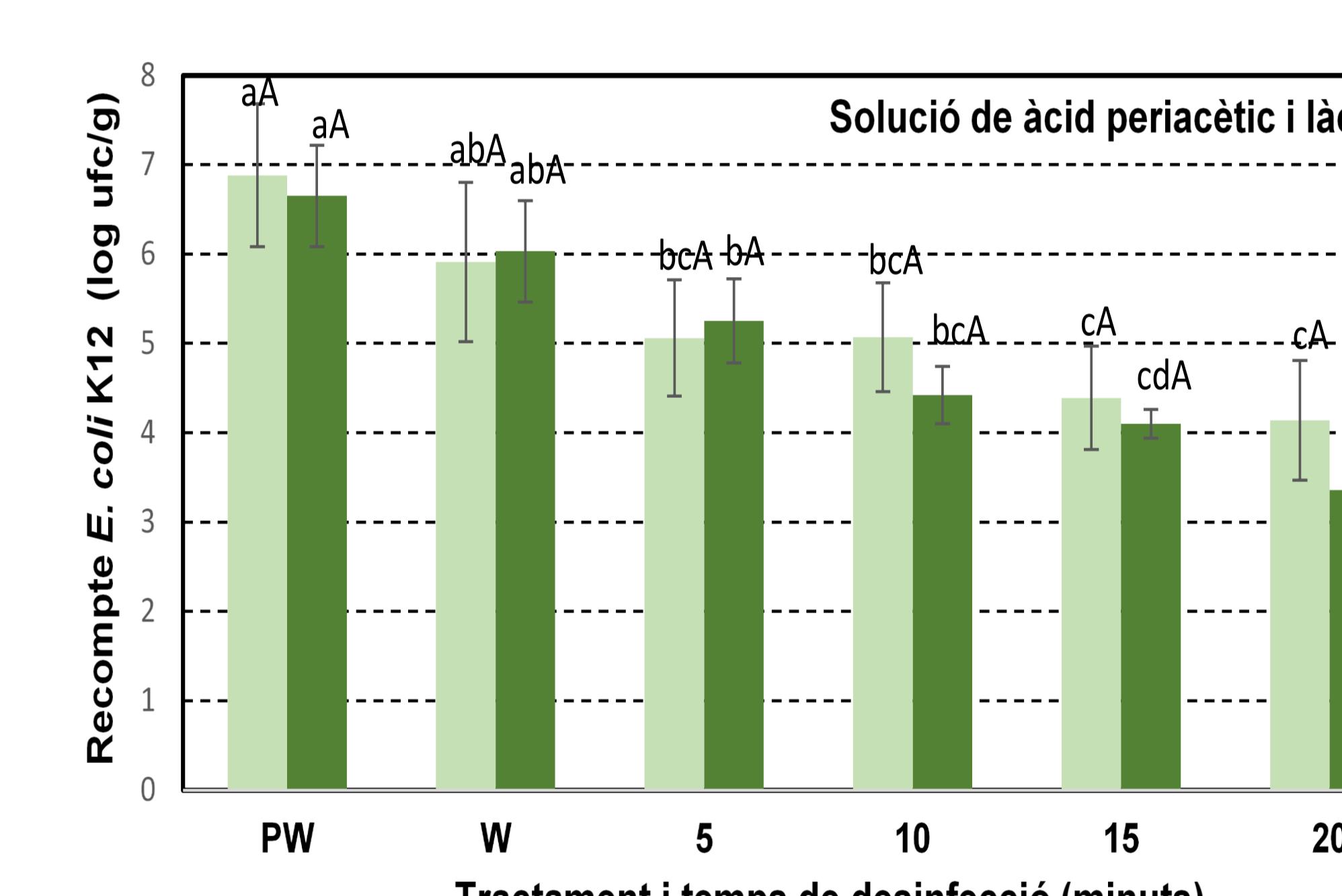


Table 2: Effect of peracetic acid (75 ppm) and lactic acid (4500 ppm) in lettuce disinfection

Experiment	Tractament	Recompte (log UFC/mL)
Control	Rentat inicial <sup>1</sup>	$3.79 \pm 1.97$ a
	Desinfecció amb aigua (20 min)	$3.09 \pm 1.89$ a
Desinfecció	Esbandid	$0.86 \pm 1.40$ b
	Peracètic tallada	ND <sup>2</sup>
	Peracètic sencera	ND
	Peracètic+àcid lòtic tallada	ND
	Peracètic+àcid lòtic sencera	ND
	Esbandid Peracètic tallada	ND
	Esbandid Peracètic sencera	ND
	Esbandid peracètic+àcid lòtic tallada	ND
	Esbandid Peracètic+àcid lòtic sencera	0

1. Recompte de l'aigua de rentat inicial, tant de les mostres control com les del tractament amb desinfectants.

2. ND: no detectat en 1 mL de mostra

Table 3: Microbiological count (UFC/mL) of water in every experiment

## Conclusions

- In all experiments microbiological reduction was significant starting after 20 minutes.
- Disinfection water presented absence of the pathogen ensuring non cross-contamination.
- Peracetic acid didn't present any signal of synergy with lactic acid.
- Reduction was higher in whole than cut lettuce.
- Peracetic acid presents a high stability and its concentration is constant during all the process.