

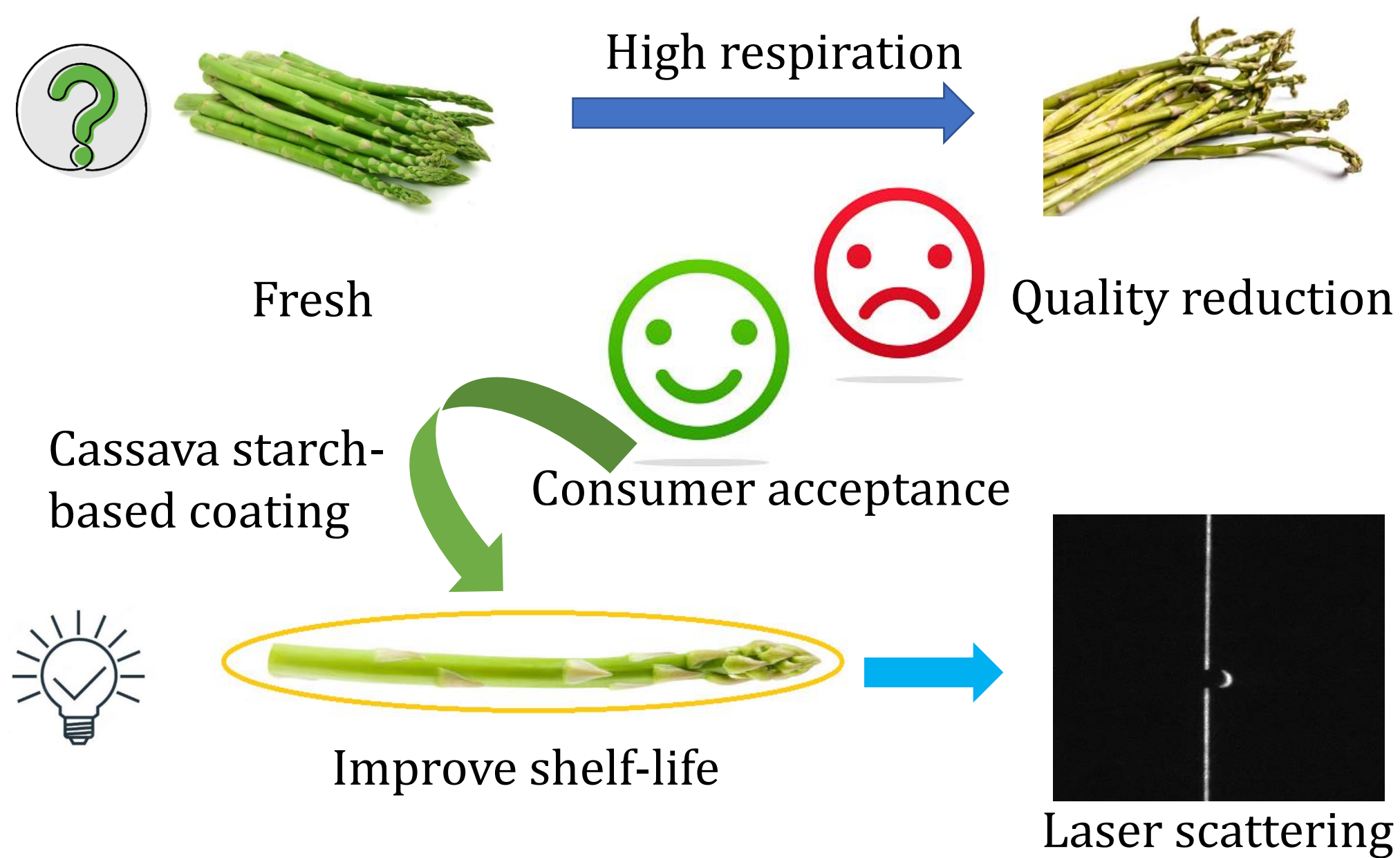
Assessment of the Quality of Green Asparagus (*Asparagus officinalis* L.) Treated by Cassava Starch-Based Coating using Laser Scattering

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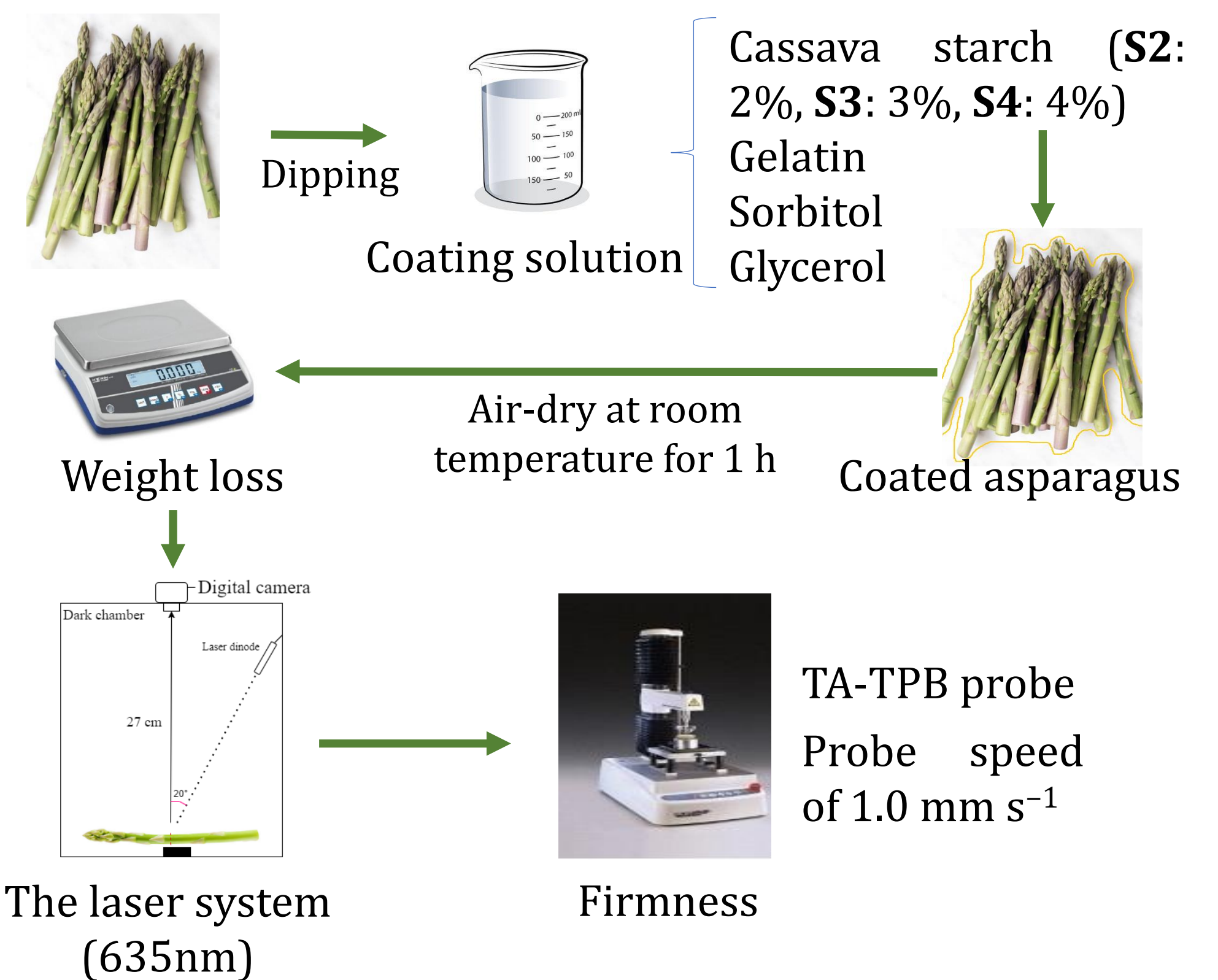
Introduction



- Evaluate the impact of coating on weight loss and firmness of green asparagus stored at room temperature (26 ± 2 °C, 65-70% RH).
- Investigate the potential of laser scattering technology in classify the asparagus quality during storage.

Methods

Green asparagus (n = 200) were bought directly from the grower (Csengőd, Hungary). They were fresh, uniform, washed, and free from any physical damage.



Results

1. Weight loss

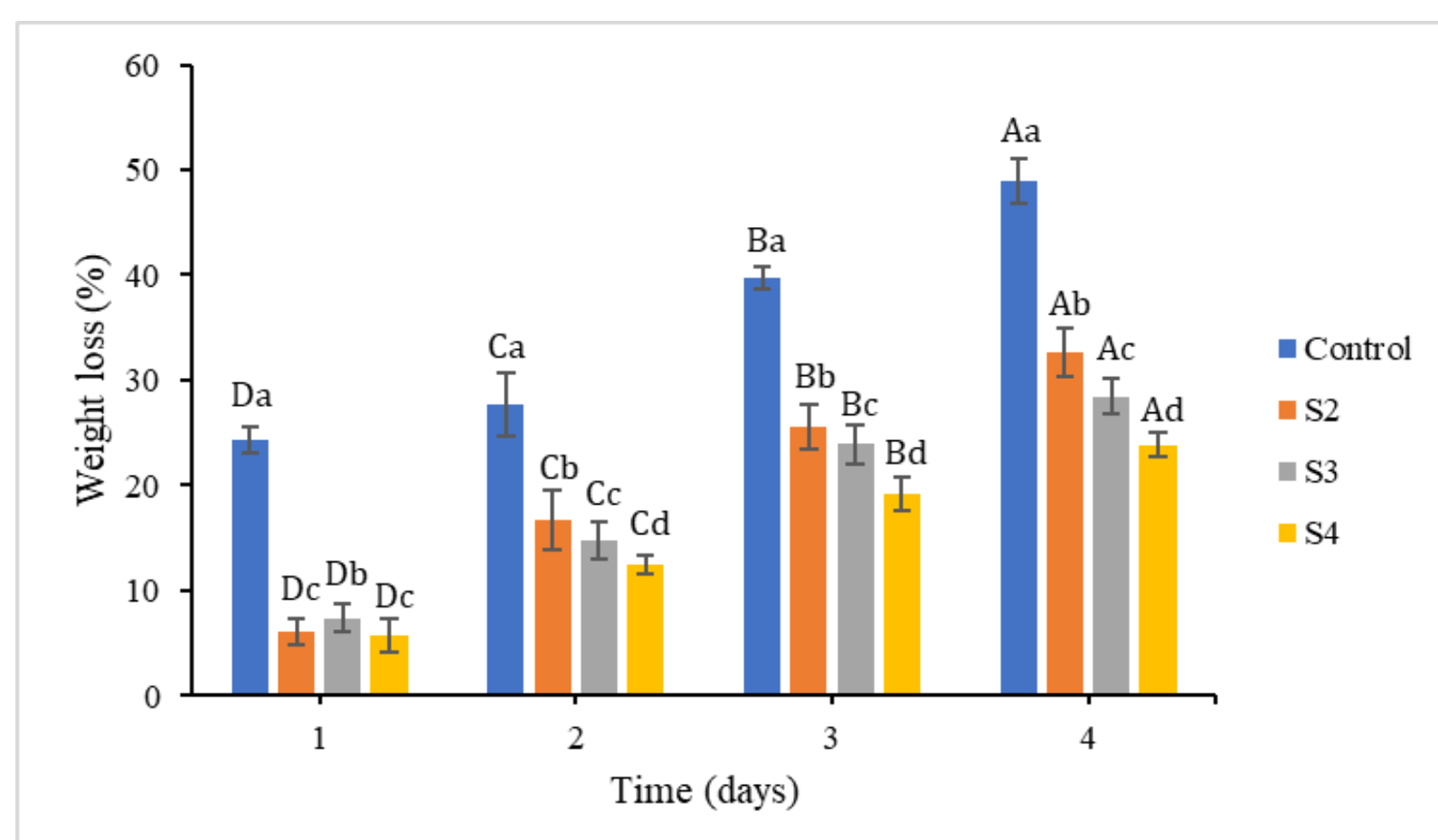


Figure 1. Asparagus weight loss during storage. Upper case is for the comparison in time (Tukey's, $p < 0.05$), lower case is for the comparison of treatments (Tukey's, $p < 0.05$).

2. Firmness

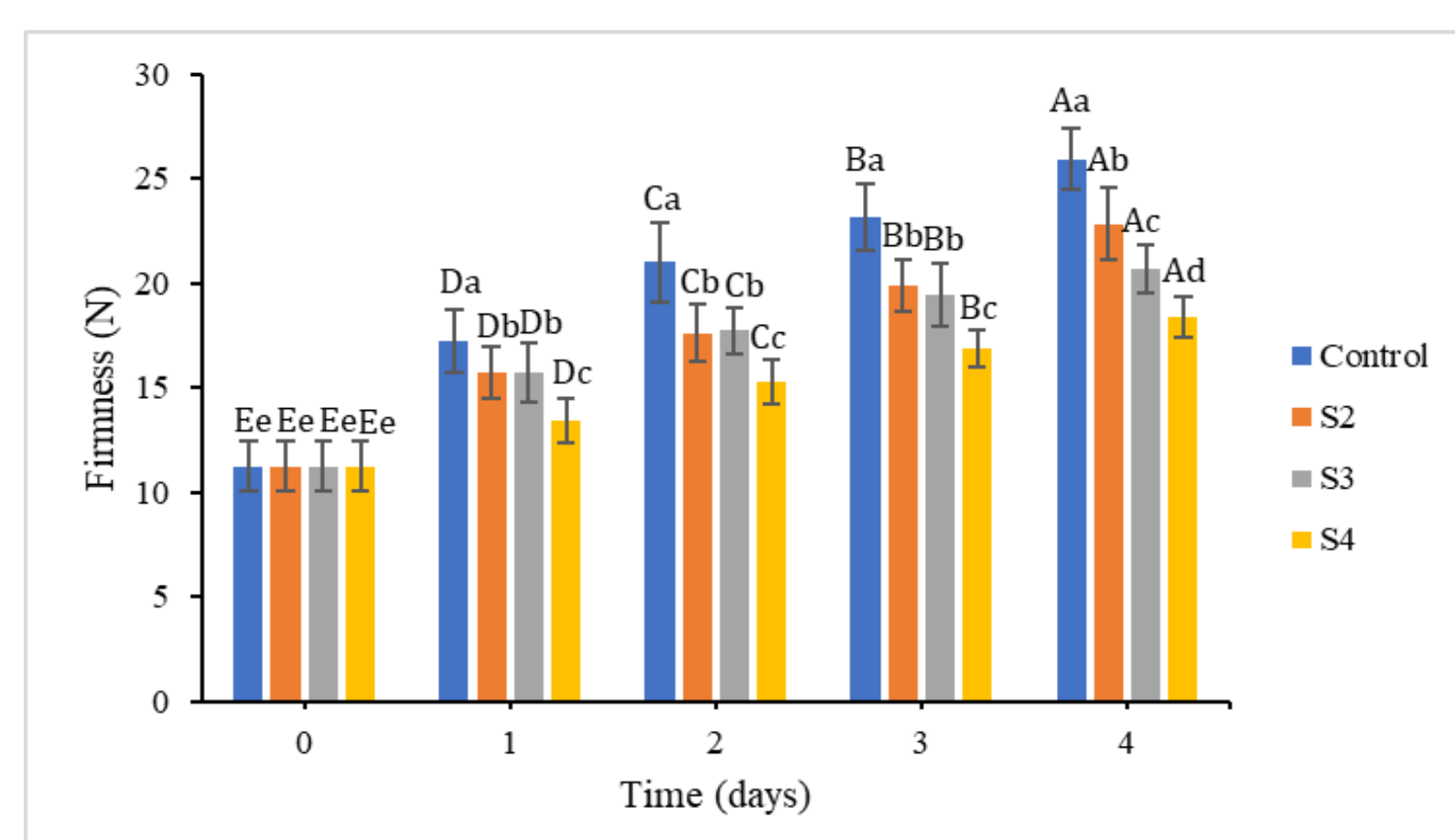


Figure 2. Asparagus firmness during storage. Upper case is for the comparison in time (Tukey's, $p < 0.05$), lower case is comparison of treatments (Tukey's, $p < 0.05$).

3. Line laser scattering analysis

Table 1. F-values from ANOVA analysis on the extracted parameters

Parameter	Time	Treatment	Interaction
FWHM	5.288***	3.894**	0.861
D75	2.005***	2.602*	1.522
D25	7.403***	4.649**	0.812

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$

Table 2. Classification results based on scattering line analysis at 635 nm

Wavelength	Classification Accuracy (%)	
	Storage time	Treatment
635 nm	70.54	75.26

Conclusion

The coating formula that contained 4% starch proved to be the most effective in maintaining the quality of asparagus. It is still important to combine with other methods to further improve the shelf-life of asparagus.

The laser scattering technique allowed to distinguish the quality of asparagus during storage with a correct classification rate higher than 70% in all cases. These findings suggest that line laser scattering is a highly promising technology for classification asparagus quality.