

Newly proposed harvest method, Branch-cut harvest for *Aralia elata* extends cold storage life and maintains the quality of edible shoots

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INTRODUCTION

Aralia elata which is called "Dureup" in Korea, is one of the indigenous species in Korea having 1-6 m height, 8-10 cm root collar diameter with brown-gray bark and canary yellow fresh branches and sparse fine thorns. The edible young shoot of *A. elata* is well-known for its high nutrients and medicinal effects which is helpful to human health. In despite of the nutritional advantages, it is hard to store more than one week in cold storage due to its vigorous metabolic activities after harvest. The objective of this study was to examine the effects of branch-cut harvest method on shoot quality characteristics and storability compared with the shoot harvested with conventional method.

MATERIAL and METHOD

- Plant material : *Aralia elata*
- Harvesting method : 1) shoot with branch-cut harvest (SBH)
2) shoot harvest (SH)
- Storage conditions : packed into plastic container and stored at $3 \pm 1^\circ\text{C}$
- Quality parameters : weight loss, water content, lightness, quality Index (wilt, decay, off-odor, overall quality)

RESULT

Changes of quality parameter of *A. elata* during cold storage

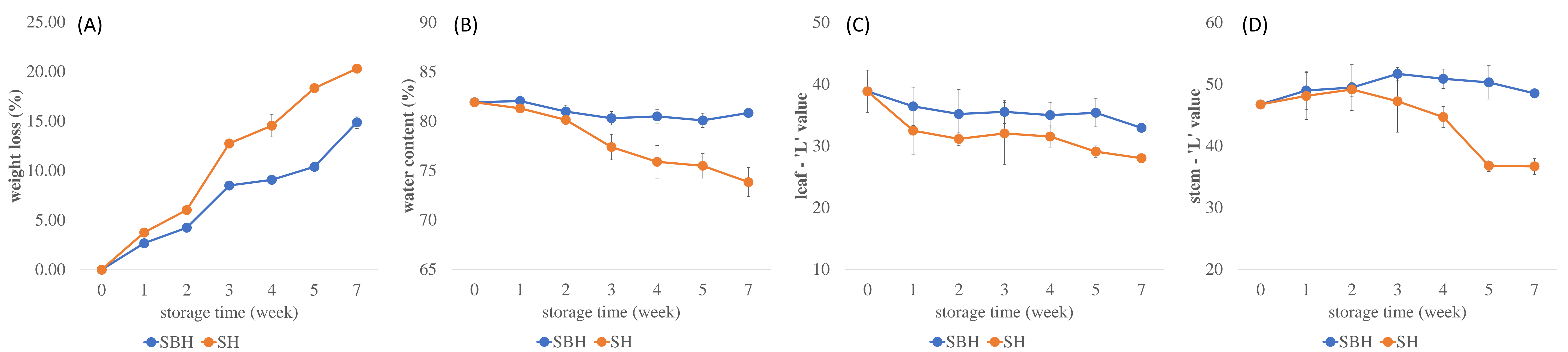


Figure 1. Changes of weight loss (A, n=3), water content (B, n=3), lightness of leaf and stem (C and D, n=6) of *Aralia elata* stored at $3 \pm 1^\circ\text{C}$ for 7 weeks. Data are expressed as the mean \pm stand error of replicates.

Quality index of *A. elata* during cold storage

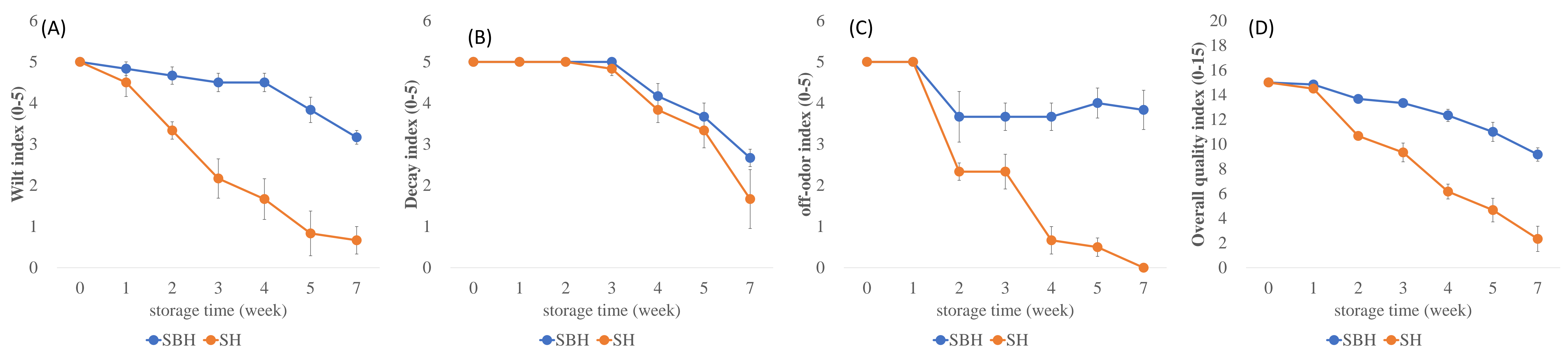


Figure 2. Changes of wilt (A), decay (B), off-odor (C) and overall quality index (D) of *Aralia elata* stored at $3 \pm 1^\circ\text{C}$ for 7 weeks. Data are expressed as the mean \pm stand error of replicates.



Figure 3. Appearance of shoots with branch harvested (SBH) and shoots harvested (SH) *A. elata* after 4 weeks of cold storage.

- Weight loss of SH (18.3%) was significantly higher than SBH (10.3%) after 5 weeks of storage (Fig. 1A).
- Water content of SH decreased 81.9% to 75.9%, while SBH showed 81.9% at harvest and 80.5% after 4 weeks. SBH was about 80% during whole storage while that of SH showed 73.8% at the end of storage (Fig. 1B).
- The lightness of leaves in SH was lower than SBH during storage period and the lightness of stems in SH began to be lower than SBH after 2 weeks of storage (Fig. 1C-D).
- Wilt, decay and off-odor index (0-5) showed 1.7, 3.8 and 0.7 in SH while 4.5, 4.2 and 3.7 in SBH after 4 weeks, respectively (Fig. 2A-C).
- Overall quality index (0-15) which is sum of the wilt, decay and off-odor index, was rapidly decreasing 15.0 to 6.1 in SH while SBH slightly reduced 15.0 to 12.3 after 4 weeks (Fig. 2D).

CONCLUSION

- The weight loss, water content and wilt index indicated that SH rapidly lost its moisture, which is major quality characteristic of leafy vegetable during 2-3 weeks.
- With loss of its water content and increase of wilt index in SH, the lightness of leaf and stem of SH *A. elata* darkened compared to SBH.
- The wilt and off-odor index of SBH showed higher than SH, which result indicated that the overall quality of *A. elata* determined by wilt and off-odor after harvesting and during storage.
- The SH *A. elata* lost its marketability after 1 weeks while those SBH maintained for 4 weeks which is demonstrated by the overall quality index in these period.
- In conclusion, it is able to maintain product quality for 4 weeks after harvest to use the SBH method, which is a remarkable extension storage life of *A. elata*.