Title Maintaining quality of Japanese-style green tea after harvest

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Abstract

Green tea (*Camellia sinensis var. sinensis*) is an established crop around the world. However local factors in the development of the green tea industry in Australia meant that we needed to understand and manage quality changes in freshly harvested green tea before processing. Japanese-style green tea is processed (steamed and dried) as soon as possible after harvest. In this study we examined the effect of delaying processing at different storage temperatures and cooling rates. The results consistently showed that freshly harvested green tea shoots had a very high rate of respiration. Most of this energy is released as heat; hence high temperatures are generated by freshly harvested green tea shoots. Postharvest cooling is therefore essential to remove this respiration heat. In this study, different types of cooling were investigated. The results offer some potential for the short term storage of freshly harvested shoots. The effect of lower storage temperatures on leaf quality showed that the lower temperatures reduced the rate of deterioration in physical appearance of the shoots. The effect of the lower storage temperatures on green tea quality showed there were no differences between treatments as measured by the standard AF system using the NIR determination of final green tea product. However the quality of final tea will decline if excessive time and temperatures are experienced by freshly harvested green tea shoots before processing. The measurement of the individual components of green tea quality before processing showed that the lower storage temperature maintained the chemical composition of the harvested shoots within the first 24 hours of storage at 3°C. But these quality attributes (total catechins and theanine content) declined by 48 hours storage indicating loss by oxidation and polymerisation. This short window of storage within the first 24 hours after harvest provides some opportunities for further investigation. These results confirm the necessity for adequate postharvest handling and logistics in green tea harvesting and processing.