

# Physicochemical properties and microbial control of chestnuts (*Castanea sativa*) coated with whey protein isolate, chitosan and alginate during storage

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Scientia Horticulturae 263: 109105. (2020)

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## Abstract

Chestnuts (*Castanea sativa* Mill.) were subjected to three different coatings - chitosan, alginate and whey protein - and stored under refrigeration (0 °C, 90% HR) during 6 months. The shell color parameters  $a^*$ ,  $b^*$  and C showed a tendency to decrease in all samples, while  $L^*$  increased in alginate coated chestnuts. Application of coatings had no effect on moisture, water activity ( $a_w$ ), as well as in the color inside the fruit and texture parameters (maximum penetration force and hardness). On the contrary, acidity and total soluble solids increased during storage in coated samples. The chitosan coating reduced chestnuts microorganisms' counts after 6 months of storage, compared to the control. In conclusion, chitosan coating improved the microbial quality of chestnuts, so it is a possible preservation alternative and an effective method to solve the problem of microbial growth in chestnuts throughout storage.