Title Role of pre-formed antifungal substances in the resistance of fruit to postharvest pathogens.

Author N. Adikaram, C. Karunanayake and C. Abayasekara.

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Abstract

Fruits contain secondary metabolites with antifungal properties, called phytoanticipins. They are mostly concentrated in the fruit peel and compartmentalized in vacuoles, organelles, oil bodies or latex canals. Concentration and activity usually decline during ripening in coincidence with fungal rot development. The information on antifungal systems in immature avocado, *Carica papaya*, mango and wood apple (*Limonia acidissima*), reviewed here, suggests that they play a role in natural disease resistance. Immature mangoes have evolved a formidable antifungal system comprising several galloyltannins, resorcinols and chitinases. Galloyltannin and resorcinol levels are generally higher in resistant cultivars than in susceptible ones. Mango latex, distributed in a fine network of canals in the fruit peel, contains resorcinols and chitinases and has the ability to rapidly digest conidia of *Colletotrichum gloeosporioides.* Galloyltannins and resorcinols decline progressively during ripening and the latex disappears, when ripe rot development begins. Retention of latex in the harvested fruit reduces anthracnose and stem-end rot development during ripening. Although unripe mangoes respond to *C. gloeosporioides* infection by inducing superoxides, peroxidase etc. leading to cell death, the phytoanticipins appear to play a major defensive role. Pre- or postharvest treatment with plant inducers, and soil supplement with potassium or silicates enhanced fruit resistance to anthracnose and stem-end rot. *Carica papaya* fruit too contains chitinases in the latex while avocados and wood apples have strong antifungal systems, each with several phytoanticipins. Fruits with strong phytoanticipin systems in general do not appear to induce phytoalexins, and chitinase seems to be a compromise defence for phytoalexins.