Effect of Salt on the Stability of Color of Umeboshi (Jpanease Pickled Plum)

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Jpanease traditional food "umeboshi" is colored by anthocyanin pigment of purple leaves of Perilla ocimoides. Anthocyanins are widely distribute in flower petals, fruits and leaves of higher plants and have vivisd orange, red, violet or blue color. These pigments are expected to a safe food colorant but the extracted pigments are ordinary unstable and decolorized quickly under neutral or weakly acidic condition. It have been a question why umeboshi keeps such a beatiful red color for sevral years. Umeboshi is strongly acidic and contains about 20% salt. So salts must be concerned with color stability.

We isolated the pure pigments from Perilla leaves by our procedure. The structures were determined completely by FABMS and ^{1}H NMR to be malonylshisonin as major pigment, but not shisonin. The complete structures of the other pigments were also determined.

Malonylshisoin was dissolved in various pH's (pH 2.0 to 6.0) and concentration's (0 to 20%) salt(NaCl) solutions. The stabilities were analyzed by UV-VIS and HPLC. The color stability depended on concentration of salts at every pHs. In acidic solution the decrease of malonylshisonin was also prevented by salt. But in neutral or weakly acidic solution the decomposition of malonylshisonin was accelerated by addition of salt. In strong acidic solution malonylshisoin changed to shisonin cyanin and cyanidin-mono-glucoside.

When "ume" was pickled with various concentrated salt, the umeboshi piclked with the largest amount of salt had the redest color.