

Chemical Composition of Avocado Fruits

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SUMMARY

The actual acidity in the pulp (without skin) in avocado fruits increases outwardly toward the skin and also increases from the stem toward the tip end, in the inner as well as in the outer portions. This indicates that the outer better aerated tissues are more acid because carbon dioxide, which tends to make the tissues more alkaline, is more quickly removed. The gradients in the acidity may be related to the distribution of stomata in the skin and their distance from the portion of pulp tested.

No consistent differences were found between the fat content of the stem and tip halves of the pulp of avocado fruits.

The pulp (without skin) of the stem halves of avocado fruits contains slightly more reducing and total (as reducing) sugars than that of the tip halves, and in many cases the nonreducing sugar is higher in the tip than in the stem halves. The data indicate a reduction in sugar content with increasing maturity of the fruits. Differences in the content of sugars in the two halves of pulp nearly disappear as maturity is approached.

The halves of pulp of Fuerte avocado fruits cut lengthwise from the stem to the tip end contain approximately equivalent amounts of chemical constituents. Data are given regarding the grams of the various inorganic constituents in a fruit of a given weight.

The tip halves of the pulp (without skin) usually contain in the fresh weight slightly higher percentages of dry matter than the stem halves. As the Fuerte and Benik avocado fruit samples approach maturity, a somewhat marked change occurs in the slope of the curves for the dry-matter percentages.

TIP AND STEM HALVES DIFFER

The ash as a percentage of the dry matter of the tip halves of the pulp of Fuerte avocado fruits is greater than that of the stem halves.

Potassium is the most abundant constituent of the ash and occurs in greater concentration in the tip halves of the pulp of Fuerte avocado fruits than in the stem halves.

The sodium content of the pulp is small but the percentages in the dry matter increase as the fruits develop.

The percentages of calcium in the pulp of Fuerte avocado fruits are small. The stem halves of the pulp contain greater percentages of calcium in the dry matter than the tip halves. The direction of the calcium gradient in the pulp halves is opposite to that of potassium.

The inorganic phosphate, as a percentage of the dry matter, decreases with increasing age of the fruits.

Data are given regarding the iron and manganese content of the various portions of the pulp. The differences in the iron content of fruit halves do not appear to be statistically significant. The concentrations of manganese in the tip halves of the pulp of fruits of the Fuerte, Puebla, and Benik varieties exceed those in the stem halves. The manganese content in the fruit halves decreases as the fruits become older.

Both the skin and pulp of Anaheim avocado fruits contain relatively large concentrations of copper in the pulp and skin. The largest copper content in the pulp occurs in the outer portion of the tip half.

The percentages of total nitrogen (including nitrates) are greater in the dry matter in the tip than in the stem halves of avocado fruits.

CHLORINE CONTENT VARIES

The percentages of total sulphur and total chlorine are greater in the stem than in the tip halves of the dry matter of the skin of avocado fruits.

The pulp and the skin of the tip halves of avocado fruits, grown under conditions of high chlorine, contain smaller percentages of chlorine than the pulp and the skin of the stem halves. In each of the varieties studied, the outer portion contains smaller percentages of chlorine than the inner portion of the same halves of pulp. The skin and pulp of avocado fruits may accumulate chlorine to a considerable degree when chlorine is present in large concentrations in the soil solution. It is possible that chlorine may be involved in the break-down of tissue in the skin of overmature avocado fruits.

The percentages of calcium in the dry matter of the skin of avocado fruits are greater in the stem than in the tip halves. Higher percentages of ash, calcium, magnesium, sodium, and potassium are found in the skin of fruits of the Fuerte and Benik varieties than in that of fruits of several other varieties studied.

PERCENTAGES OF POTASSIUM AND MAGNESIUM IN THE DRY MATTER OF THE PULP HALVES (WITHOUT SKIN) OF AVOCADO FRUITS. THE PERCENTAGES OF POTASSIUM ARE GREATER IN THE OUTER THAN IN THE INNER PORTIONS.

