桃10~4500 MHz间的介电特性与内部品质关系分析 Relationship between Dielectric Properties from 10 to 4500 MHz and Internal Quality of Peaches

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关键词： 桃 品质 可溶性固形物 含水率 介电特性

摘 要： 以不同成熟度的银风桃为对象，利用同轴探头技术测量了25℃下10~4500MHz间桃肉和桃汁的介电参数，并测量了桃肉的含水率、桃汁的可溶性固形物含量、pH值和电导率，分析了介电特性和内部品质间的关系。结果表明，桃肉和桃汁的相对介电常数皆随着频率的增大单调减小，而介质损耗因数呈现“V”型的变化趋势。离子的导电性和偶极子的极化分别是引起低频和高频下介电损耗的主要原因。桃肉和桃汁的介电参数与可溶性固形物含量、pH值以及含水率间没有明显的线性关系。 In order to explore the potential of dielectric properties in determining fruit internal quality, peaches with different maturities were selected and coaxial open-ended probe technology was used to measure permittivity of peach pulp and juice over the frequency range from 10 to 4500 MHz at 25℃. The moisture content of peach pulp, soluble solids content, pH value and electrical conductivity of juice were also measured. The results showed that the dielectric constants of pulp and juice decreased with increased frequency, while the loss factors changed with “V” type. The ionic conduction and dipolar polarization were the major loss mechanisms at lower frequencies and higher frequencies, respectively. The relationship between permittivity and soluble solids content, pH value, and moisture content was non-linear.

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