

**Title** Frequency, moisture and temperature-dependent dielectric properties of chickpea flour  
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### **Abstract**

Knowledge of dielectric properties of agricultural commodities is essential to develop thermal treatments using radio frequency and microwave energy. Dielectric properties (the dielectric constant and loss factor) of compressed chickpea flour samples were determined using an open-ended coaxial-line probe with an impedance analyzer over the frequency range from 10 to 1800 MHz, moisture contents from 7.9% to 20.9% w.b., and temperatures from 20 to 90 °C. Both dielectric constant and loss factor of chickpea samples decreased monotonically with increases in frequency at all temperatures and moisture levels. Ionic conduction was the dominant factor influencing the dielectric loss at lower frequencies in relatively high moisture samples. Dielectric constant and loss factor increased with increases in temperature and moisture content. The rate of increase was greater at higher temperature and moisture levels than at lower temperature and moisture levels. A linear relationship was obtained between the dielectric constant and loss factor when divided by the sample density. Knowledge of the frequency, moisture, and temperature-dependent behaviours of chickpea samples should be helpful in dielectric heating applications and developing new dielectric property based moisture meters.