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**MICROWAVE TECHNIQUE OF MEASURING MOISTURE CONTENT IN THE
TUBER OF DIOSCOREA HISPIDA USING MONOPOLE SENSOR**

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ABSTRACT

This paper describes the application of a monopole sensor to determine the moisture content in the tuber of *Dioscorea hispida*, based on magnitude and phase of reflection coefficient and admittance measurement. This preliminary work is to study relationship between microwave and alkaloid dioscorine of the tuber of *Dioscorea hispida*. The most widely used standard technique, which is the standard oven drying method, is time consuming and only suitable for laboratory experiment. As an alternative, measurement of moisture content in the tuber of *Dioscorea hispida* using microwave techniques is proposed. The measurement setup consists of a monopole antenna and a FieldFox RF Analyzer N9912A. This system utilizes a monopole sensor to transmit the microwave signal in the tuber of *Dioscorea hispida* sample and display the magnitude and phase of the reflection coefficient on the FieldFox. The admittance, on the other hand, is derived from the reflection coefficient measurement. The relationship between the magnitude, phase shift, admittance and moisture contents were studied. The relationships were used to obtain an empirical formula which was used to predict the moisture content in the tuber of *Dioscorea hispida*.

Keywords: monopole sensor, moisture content, microwave, tuber of *Dioscorea hispida*

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