ABSTRACT

Many factors influence the success of increasing agricultural production, but the role in fruit ripening is a major challenge. Ethylene (C_2H_4) is an important vegetable hormone involved in the ripening process of fruit, under uncontrolled conditions (especially climacteric fruit) the emission of ethylene gas often causes faster product degradation after post-harvest and storage. The purpose of this research is to make ethylene gas sensors based on polyaniline polymers on several fruits that have climacteric properties such as mango and sapodilla. Polyaniline was synthesized on the surface of a glass slide that had been coated with a graphite sticker using the electrodeposition method. This process uses a current source from a battery with a voltage of 3 V. Characterization of the synthesized product is carried out by measuring the UV spectrum. Furthermore, measurement of sensor performance using a multitester. The synthesized polyaniline is in the form of a dark green precipitate. The synthesized polyaniline was in the Emeraldine Salt state. This is confirmed by the presence of a transition at 968 nm which can only be observed in the ES form associated with the b → polaron transition. Polyaniline with 1 M HCl dopant showed the greatest resistance in each measurement, for mango with a difference of 10.2 after 1 day. The absorption of ethylene gas on the PAni surface took place more quickly with a dopant concentration of 1 M HCl compared to 0.5 M. This proves that the more conductive PANi synthesized, the better the absorption process. Therefore, polyaniline dopant HCl can be used as an ethylene gas sensor in climacteric fruit.

Keywords: ethylene, climacteric, polyaniline, gas sensor