**Antifungal activity of Piper cubeba L. extract on spoilage fungi isolated from tomato, grapes and lemon**


ABSTRACT

The berries of Piper cubeba L. or commonly recognized as tailed pepper are traditionally used as flavoring ingredients in various types of food. It has been reported with abundant of phytochemical compounds that contribute to its nutritional and medicinal properties. The antimicrobial effect of the spice including antifungal activity was believed to reduce the potential of fungal spoilage thus minimizing food losses and wastage. This study was aimed to determine the antifungal activity of P. cubeba L. extract against isolated spoilage fungi namely Geotricum candidum (TMa 001), Penicillium citrinum (GRd 001) and Trametes hirsuta (LMd 001) by in vitro and in vivo techniques. Disc diffusion assay, minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) test of the methanolic extract were performed on the selected fungi. The largest inhibition zone, fungistatic and fungicidal effects were detected in T. hirsuta with 18.30±3.00 mm, 0.039 mg/mL and 0.078 mg/mL, respectively. The inhibition of conidial germination assay was performed at 0 × MIC, 0.5 × MIC, 1 × MIC, 2 × MIC, and 4 × MIC, and the result showed G. candidum were completely inhibited at 4 × MIC. The ideal concentration of P. cubeba L. extract on different selected food commodities were 0.50% against G. candidium in tomato, 0.50% to 5.00% against P. citrinum in grapes, and 5.00% against T. hirsuta in lemon. The findings implied that P. cubeba L. extract can be listed as one of the natural antifungal agents in food. The availability of various types of natural antifungal agents will help in reducing the usage of chemical fungicide, which may lead to adverse and deteriorating health effects in the events of prolong consumption.



**Keyword:** Antifungal; Piper cubeba L.; Geotricum candidum; Penicillium citrinum; Trametes hirsuta