

International Conference on

BIOCHEMISTRY, PROTEOMICS & BIOINFORMATICS

May 16-17, 2018 Singapore

Morphological and molecular characterizations of *Fusarium* sp. causing wilt disease in ginger (*Zingiber officinale* Roscoe)

Tsegaye Mekuria¹ and Tesfaye Alemu²¹Aksum University, Ethiopia²Addis Ababa University, Ethiopia

Ginger (*Zingiber officinale* Roscoe) a member of the family *Zingiberaceae*, is a globally popular tropical herbaceous perennial plant with its rhizome merited for its culinary and medicinal properties. Ginger serves as a cash crop for household in the southern and southwestern parts of Ethiopia and also exported for foreign currency from these areas where it is largely cultivated. However ginger production in those areas is constrained by the onset of vascular wilt disease. This study has been undertaken to isolate, identify and to evaluate the pathogenicity of the fungal pathogens *in vitro* and also to see the molecular variability between the pathogenic isolates. Ginger rhizome, pseudo-stem, leaf and soil samples were collected from ginger growing areas of southwestern Ethiopia. Fungal pathogens were isolated from ginger parts showing vascular browning symptoms and from soil following standard methods. Cultural and morphological characters of pathogenic *Fusarium* isolates on PDA medium were studied. The pathogenic *Fusarium* isolates were also examined for molecular variability using PCR-RFL technique. Isolation revealed fungal isolates belonging to four genera: *Fusarium*, *Penicillium*, *Aspergillus* and *Trichoderma*. Out of 24 fungal isolates 14 isolates were *Fusarium* species. *In vitro* pathogenicity test resulted in pathogenicity index (PI) values ranging from $10.96 \pm 1.55\%$ to $45.35 \pm 11.57\%$. Cultures of *Fusarium* species on PDA showed white, creamy white, dull pink and pink coloration. They imparted dull white, orange, light reddish purple, intense reddish purple and dark reddish purple pigmentations on the reverse side. Canoe shaped macroconidia, ovoid microconidia and short phialides were pertinent to all of the *Fusarium* isolates. Based on their cultural and morphological characters, the isolates were identified as *Fusarium oxysporum*. The ability of the isolates to induce rhizome rot indicated the forma specialis rank of the isolates as *F. oxysporum* f. sp. *zingiberi*. PCR- RFLP profile of the ITS1 rDNA region indicated genetic variation between the pathogenic *Fusarium* isolates.

tsegalemmekuria@gmail.com