



## Molecular detection of the entomopathogenic fungus *Beauveria bassiana* isolates from soils of coffee growing areas in Ethiopia using rDNA-ITS

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### ABSTRACT

**Objective:** This study molecularly characterized the entomopathogenic fungus using ITS gene with the aim of using as a source for future control of the coffee berry borer

**Methodology and results:** Soil samples were collected from three localities in Ethiopia. For each soil sample, ten *Galleria* larvae were used as bait for trapping entomopathogenic fungi. The total number of *Beauveria* spp. trapped from the different soil samples were 53% out of 300 *Galleria* larvae tested, in which 26.7%, 18.7% and 7.7% were from Belete chaka, Geruke and Choche farm, respectively. The amplification of the internal transcribed spacer (ITS) region of *Beauveria* spp. produced single fragments of about 560 bp for all tested isolates. Further, eight randomly selected and sequenced isolates revealed 98-100% sequence similarity and shared an overall intra-sequence similarity value of 99% among our isolates. The maximum likelihood (ML) analysis of the ITS region of *B. bassiana* formed a highly supported clade together with other isolates retrieved from GenBank. The highest evolutionary divergence estimate between sequences of Ethiopian isolates was 1%. The rDNA-ITS analysis, supported the species identification based on cultural and morphological traits and confirmed and characterized the isolates as *B. bassiana*.

**Conclusion and application of results:** The identification based on molecular tool helps to maintain a pure culture of the species. This result will assist for future application as a biocontrol of the fungal isolate against the coffee bean borer.

**Keywords:** Biocontrol, coffee, Ethiopia, *Galleria* baiting, ITS gene, *Beauveria bassiana*, molecular characterization