

Research Article

Bacterial Endo-Symbiont Inhabiting *Tridax procumbens* L. and Their Antimicrobial Potential

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Bacterial symbionts inhabiting *Tridax procumbens* L. were screened for antimicrobial potential with the aim to isolate potent bacteria bearing significant activity against test pathogens. The selected isolate was subjected to large scale fermentation to extract antimicrobial metabolite. The organic phase was reduced under vacuum pressure and crude ethyl acetate extract (10 mg/mL) was evaluated for antimicrobial activity against panel of test pathogens. The antibacterial activity was measured as a zone of inhibition and compared with standard antibiotics, gentamicin and tetracycline. Similarly, antifungal activity was compared with miconazole and bavistin. Significant activity was conferred against *Shigella flexneri* (MTCC 731) with 27 ± 1.5 mm zone across the disc. Partially, purification of antimicrobial metabolite with TLC-bioautography and HPLC resulted in active fraction bearing activity at R_f 0.65 and eluting between 4 and 5 retention times. The obtained results are promising enough for future purification and characterization of antimicrobial metabolite. Thus, the study attributes to the growing knowledge on endophytes as one of the rich sources of antimicrobial potentials.

1. Introduction

In recent years, microbial entities inhabiting medicinal plants are considered to be one of the rich novel sources of bioactive compounds bearing activities. In view of the ongoing efforts to combat drug resistant microbial pathogens, scientific communities are focusing on these microbial symbionts. It is well documented that every plant species is reported to inhabit diverse consortium of microbial symbionts which are known as endophytes [1]. These endophytes reside inside healthy tissues of plants and secrete bioactive metabolites bearing biological activities like antimicrobial, antitumor, antidiabetic, anti-inflammatory, antioxidant, and so forth [2]. Perusal of literatures confers the majority of studies conducted on fungal endophytes compared to bacterial endophytes which are known to be one of the dominant microbial communities

colonizing the inner tissues [3]. Owing to these facts, the present study aims to screen bacterial endophytic symbionts from medicinal *Tridax procumbens* L. The selection of plant was carried out based on the traditional knowledge and prior investigation on endophytes. Earlier study demonstrates antibacterial activity of crude extract from endophytes *Colletotrichum* sp. and *Alternaria* sp. isolated from *Tridax procumbens* L. [4]. *Tridax procumbens* L. is reported to possess significant medicinal value and is used as medicine in developing countries by tribal community for its wound healing properties. Studies also envision *Tridax procumbens* L. for antioxidant, antimicrobial, hepatoprotective, anti-inflammatory, and anticancerous properties [5]. Hence, the present investigation attributes to the growing scientific knowledge on endophytes as one of the merited microbial sources towards secreting antimicrobial metabolites.