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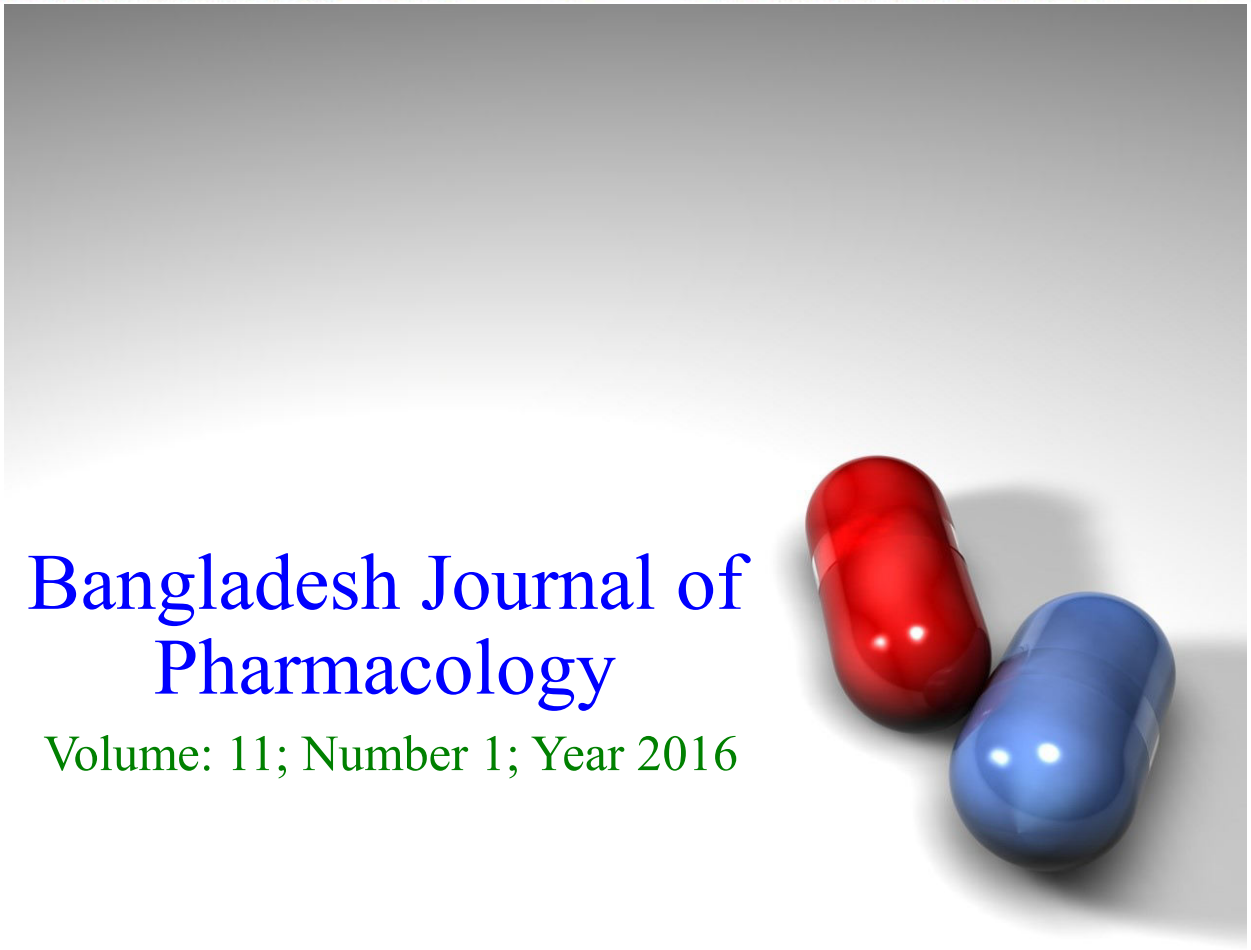

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# Letter to the Editor

## *In vitro* antitubercular activity of *Tridax procumbens* extracts against whole cell *Mycobacterium tuberculosis* and its lysine aminotransferase

Sir,

Tuberculosis is a contagious airborne disease caused by the pathogen *Mycobacterium tuberculosis*. Worldwide, 9.6 million people are estimated to have fallen ill with tuberculosis in 2014 (WHO Report., 2015). The urgent need for the development of new drugs to reduce the global burden of tuberculosis is well documented in the current biomedical literature (Zheng et al., 2014). New antitubercular drugs are required to be active against both replicating and nonreplicating bacteria, and to penetrate tissues and granulomas to allow reduced treatment duration (Zheng et al., 2014). A wide structural diversity of antimycobacterial compounds has been discovered from plants (Gautham et al., 2007). *Tridax procumbens*is an ethnobotanically important medicinal plant extensively used in Indian traditional medicine for various ailment. as anticoagulant, antifungal and insect repellent; diarrhoea and dysentery. The present study reports the antitubercular activity against the whole cell *M. tuberculosis* and also against its lysine aminotransferase.

*T. procumbens* leaves were collected in September, 2014 from Sathyabama University Campus, Chennai District of Tamil Nadu. Crude extract of the leaf powder was prepared by solid-liquid extraction using methanol, ethyl acetate and n-hexane at 1:5 ratio and quantified. Antitubercular activity of crude extracts of *T. procumbens* was tested against *M. tuberculosis* H37Rv at 250 and 500 µg/mL concentrations by adopting luciferase reporter phage (LRP) assay (Radhakrishnan et al., 2016). Isoniazid and rifampicin was also included as standard drug control. Inhibition of MTB lysine aminotransferase by all three crude extracts was also tested by the colorimetric method (Radhakrishnan et al., 2016).

Antitubercular activity of different solvent extracts of *T. procumbens* was given in Table I. Among the three solvent extracts tested, only the methanol extract and the *n*-hexane extract was showed more than 70% inhibition at 500 µg/mL concentration against *M. tuberculosis* H37Rv. n-Hexane extract showed no activity at both the concentrations tested. Both the standard drugs such as isoniazid and rifampicin was showed more than 95% inhibition at 2 and 0.2 µg/mL, respectively.

**Table I**

**Antitubercular activity of *T. procumbens* leaves ex-tracts against *M. tuberculosis* H37Rv by LRP**

| Extracts | Concentration (µg/mL) | %Reduction in RLU |
|---|---|---|
| Methanol extract | 500 | 73.7 |
| | 250 | 42.2 |
| Ethtyl acetate ex-tract | 500 | - |
| | 250 | - |
| *n*-Hexane extract | 500 | 74.2 |
| | 250 | 48.3 |
| Standard anti-tubercular drugs | | |
| Isoniazid | 2 | 96.8 |
| Rifampicin | 0.2 | 99.8 |

In MTB lysine aminotransferase inhibition assay, the $IC_{50}$ value of methanol extract was found to be 67.3 µg/mL and whereas the $IC_{50}$ value for the *n*-hexane extract was found to be 200 µg/mL. Ethyl acetate was not showed inhibition at all the concentrations tested.

Whole-cell assays and target-based assays are normally used in high throughput screening. Target-based assays are more directional but some natural products with good inhibition of pure enzymes may also show a limited inhibitory effect on *M. tuberculosis* cells due to their limited membrane permeability (Henriksson et al. 2007). In the present study, the crude extracts of *T. procumbens* inhibited both whole *M. tuberculosis* cells and its lysine aminotransferase enzyme.

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