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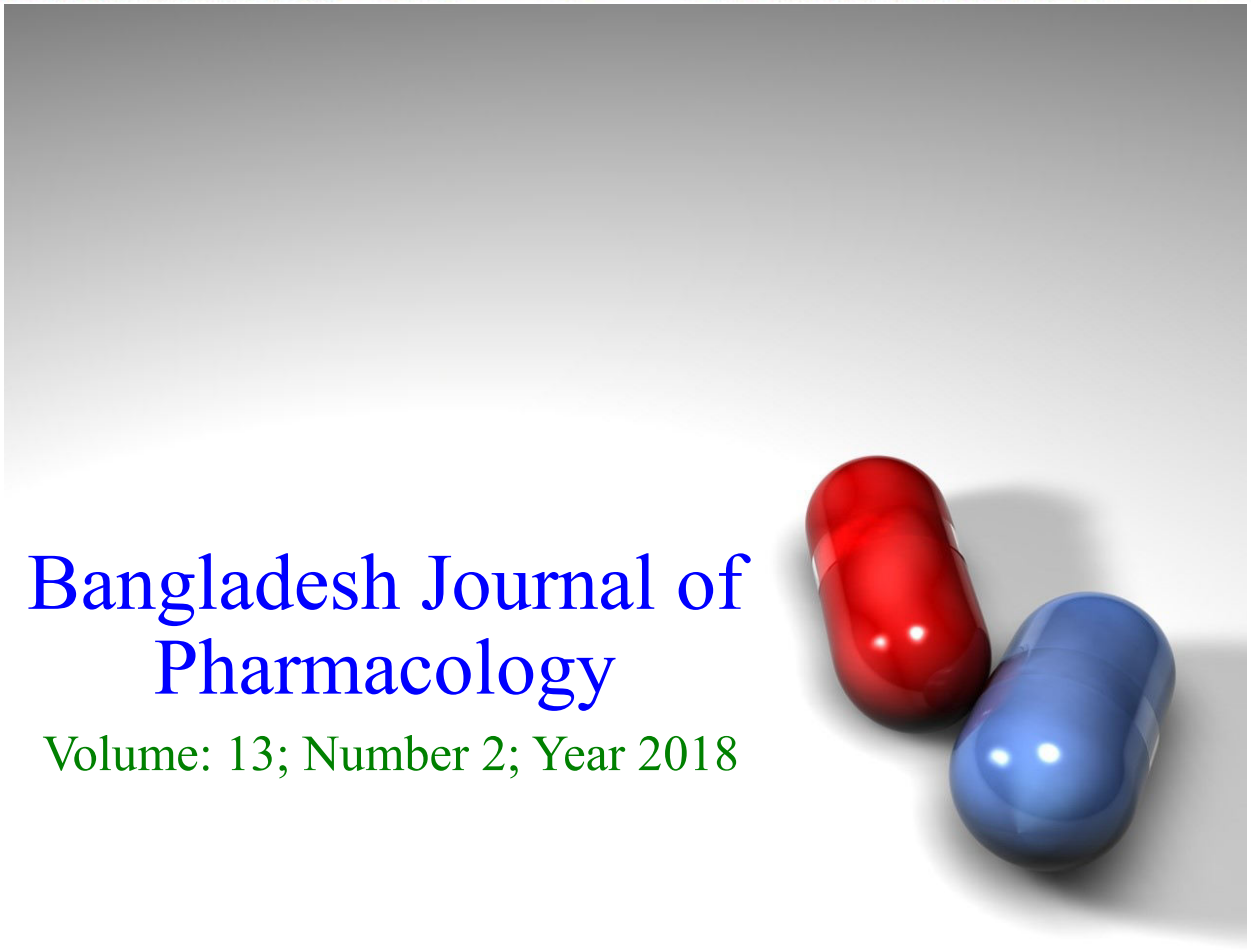

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Letter to the Editor

Antimycobacterial activity of marine *Sargassum swartzii* extracts against *Mycobacterium tuberculosis*

Sir,

According to World Health Organization report (WHO), about 10.4 million people have fallen ill with tuberculosis out of which around 1.7 million people have died from the disease in the year 2016 (WHO Global Tuberculosis Report, 2017). Tuberculosis possess -es a serious problem around the world by way of increase in the rate of drug-resistant tuberculosis.

The increased prevalence of drug-resistant strains and side effects associated with the current anti-tubercular drugs makes the treatment options more complicated. Hence, there is an urgent need to identify novel active compounds with lesser or no toxicity/side effects to fight against the various sub-populations of *Mycobacterium tuberculosis*. Marine organisms are now being recognized as a rich source of polyunsaturated fatty acids (PUFA), polysaccharides, natural pigments (NPs), enzymes and bioactive peptides (Senthilkumar and Kim, 2013).

Sargassum, a marine brown algae have been reported for its various biological activity (Dore et al., 2013; Song et al., 2016). Numerous studies have been undertaken for purification and characterization of sulfated polysaccharides derived from brown algae *Sargassum sp.* Such sulfated polysaccharides exhibit anti-viral, immunomodulatory, anti-oxidant, antitumor, anti-inflammatory, anti-angiogenic, anticoagulant and anti-vasculogenic activities (Yende et al., 2014).

In India, *Sargassum* is commonly distributed along the shore of Gulf of Mannar, Pamban, East Coast region and other seashores. Our present study reports the antimycobacterial activity of *Sargassum swartzii* against the whole cell *M. tuberculosis* H37Rv by luciferase reporter phage (LRP) assay.

Sargassum swartzii was collected from Mandabam (Gulf of Mannar), Tamil Nadu, India and it was cleaned with seawater to remove impurities. Then it was transported to the laboratory in sterile polythene bags. In the laboratory, seaweeds were rinsed thoroughly with tap water followed with distilled water and then shade dried. After drying, seaweeds were cut into small pieces and powdered by using mixer grinder. Different organic solvents such as methanol, ethyl acetate, chloroform, petroleum ether, hexane and aqueous (distilled water) were used for extraction of active compounds. Briefly, about 100 g of each seaweed powder was soaked in 500 mL of different solvents separately. After 24 hours, the extracts were filtered and concentrated using a rotary evaporator. After evaporation, the crude extracts were weighed and suspended in the 10% dimethyl sulfoxide at a final concentration of 100 mg/mL. All the extracts were stored at 4°C. The antimycobacterial activity of different solvent crude extracts of *S. swartzii* was tested against *M. tuberculosis* H37Rv at a concentration of 500 µg/mL by adopting LRP assay (Radhakrishnan et al., 2016). The relative light unit (RLU) was measured immediately at 10 sec integration time in a luminometer (Lumat 9508, Berthold, Germany). Extracts showing more than 50% RLU reduction was considered as inhibition. The percentage of reduction was calculated by using following formula: control RLU – test RLU / control RLU × 100.

Table I

Antimycobacterial activity of crude extracts against *Mycobacterium tuberculosis* H37Rv

Crude extracts	Concentration	%Inhibition	Result
Methanol extract	500 µg/mL	86.8	Inhibition
Ethyl acetate extract	500 µg/mL	57.0	Inhibition
n-Hexane extract	500 µg/mL	25.5	No inhibition
Chloroform extract	500 µg/mL	70.8	Inhibition
Water extract	500 µg/mL	67.2	Inhibition

Antimycobacterial activities of different solvent crude extracts of *S. swartzii* were reported in Table I. Among the extracts tested, the methanol extract, ethyl acetate, chloroform extract and aqueous extract showed inhibition at 500 µg/mL concentration against *Mycobacterium tuberculosis* H37Rv whereas, *n*-hexane showed no inhibition against the strain tested.

In conclusion, the *S. swartzi* extracts inhibited the whole cell *M. tuberculosis* H37Rv and findings from this study would pave way for developing a newer antimycobacterial lead compound. Further studies are required to be carried out with these extracts of *S. swartzii* to develop a novel anti-tubercular drug in future.

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