**Supporting Information**

**Synthesis, Characterization and Applications of New Schiff Base as Microbicidal Agent and Removal of Heavy Metals from Water**

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**Abstract**

The new Schiff base ligand, *N*,*N*'-(3,3'-dimethyl-[1,1'-biphenyl]-4,4'-diyl)bis(1-(4-bromophenyl)methanimine (**SBL**),has been synthesized through condensation of 3,3'-dimethyl-[1,1'-biphenyl]-4,4'-diamine (**1**) with 4-bromobenzaldehyde in the presence of acetic acid as catalyst and characterized by spectroscopic data. The Schiff base ligand (**SBL**) was subjected to evaluate its potential to remove heavy metals copper, cobalt and zinc from polluted water under various pH, contact time, concentration of metal ions, concentration of **SBL** and temperature. The results showed that **SBL** has excellent potential to remove above metals at pH 8, 1.5 hour contact time, low concentration of metal ions, low concentration of **SBL** and at 25 ºC temperature, and the potential to remove metal ions is 93 % for Cu, 81 % for Co and 79 % for Zn.. The **SBL** was also evaluated for its antimicrobial potential against *P. aureginosa, K. pneumonia,* *E. coli, S. dysentria, P. vulgaris* and *S. aureus* bacteria and *C. albican* and *A. niger* yeast. The activities results showed that **SBL** was moderately to slightly active in comparison with the ciprofloxacin for bacteria and fluconazole for yeast. Toxicity of **SBL** was also measured with its various doses such as 0.1, 1, 10, 100, 500 and 1000 mg/Kg body weight of mice through daily oral administration. Sub-acute toxicity effects were studied for 15 days to observe the changes in behaviour and mortality. The highest dose of **SBL** did not cause any mortality or change in the overall behaviour of the treated mice, **SBL** has notoxicity and is safe for the oral administration. The biochemical and histopathological studies in liver and kidney were also estimated, the results showed variation in estimated parameters.

**Keywords:** Schiff base ligand, synthesis and characterization, Heavy metals removal from aqueous, antimicrobial potential, toxicity.

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**Figure S1. FAB-MS spectrum of *N*,*N*'-(3,3'-dimethyl-[1,1'-biphenyl]-4,4'-diyl)bis(1-(4-bromophenyl)methanimine (2)**



 **Figure S2. 1H NMR Spectrum of *N*,*N*'-(3,3'-dimethyl-[1,1'-biphenyl]-4,4'-diyl)bis(1-(4-bromophenyl)methanimine (2)**