Toxicity Assessment of Imidazolium-based Ionic liquid on *Shewanella oneidensis* MR-1

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This research presents the toxicity of selected imidazolium-based ionic liquid (IL) towards Shewanella oneidensis MR-1. This marine bacterium is a gram-negative facultative aerobe known for its versatile respiratory capabilities making it useful in bioremediation studies. The selection of IL was based on the t-SAR approach focusing on the side chain length (cation effects) and on the type of anion (anion effects) with the same head group (imidazolium). Scanning Electron Microscope was used for the analysis of morphological change. Moreover, we have concentrated on analyzing the anion effect of three different anion moieties (BF4-, TfO- and Tf2N-) and the influence of cation effect (Emim, Bmim, Hmim and Omim) on (eco) toxicity. Cation effect was found to have an increasing level of toxicity as the side chain length increases which agrees with previous papers on toxicity of IL. Alternatively, toxic effect s of anion was not as distinct as demonstrated with cation effect. Lastly, adaptation of MR-1 was investigated by fatty acid analysis using GC. Our results provide the basis not only for adaptation mechanism of bacteria exposed to IL, but also information for designing safer IL.