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. For our investigations, Shewanella oneidensis MR-1 is chosen as model organism. This marine bacterium is a gram-negative facultative aerobe known for its versatile respiratory capabilities making it useful in bioremediation studies. The selection of chemical entities was based on the t-SAR approach (thinking in terms of structure-activity relationships) focusing on the length of the side chain (cation effects) and on the type of anion (anion effects) with the same head group (imidazolium). Scanning Electron Microscope (SEM) was also used for the analysis of the morphological change. To enlarge the restricted knowledge about the hazard potentials of IL to man and the environment, we have concentrated on analyzing the anion effect of three different anion moieties (BF4-, TfO- and Tf2N-) and the influence of the cation side chain length (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 the previous papers on the toxicity of IL, but, the studies of anion effects are still ongoing.