J Bioremediat Biodegrad 2017, 8:5(Suppl)
DOI: 10.4172/2155-6199-C1-009

Dual purpose of microalgae as hexavalent chromium accumulator and biodiesel producer

Lala Behari Sukla and **Debabrata Pradhan**
Siksha 'O' Anusandhan University, India

Microalgae are single cellular photosynthetic organisms having potential of very high oil content and growth rate. Moreover, the cultivation of these algae do not require diversion of agricultural land, as they can grow in both fresh water, marine or brackish water environments, and additionally fix substantial amount of CO_2 emitted from combustion. With all this promise, intense effort is now on all over the world to devise suitable systems to make large scale cultivation and harvesting of these microscopic organisms, extraction and conversion of their oil content to bio-diesel and other high value byproducts, in a cost-effective approach. Photochemical reduction of hexavalent chromium is a practical interest for detoxification waste water. Several efforts have been made to reduce Cr(VI) into less toxic Cr(III) by algae as it is available conveniently and low expense. Biomass of algae species *Chlorella vulgaris* has shown efficiency toward Cr(VI) reduction in photochemical mechanism gained lot of interest in employing algal community. Other algae like *Sargassum cymosum and Pelvetia canaliculata* have been experimented for the reduction of chromium. So in a single route dual application of Cr(VI) reduction during cultivation followed by biodiesel production post harvesting of microalgae can be projected for multiple utilization. The harvested biomass can undergo a desorption process to separate pure biomass and reduced components of chromium. For this dual purpose development of mass cultivation protocol and necessary systems required for high productivity of the microalgae with Cr(VI) reduction and biodiesel production will gain much interest in the environmental biotechnologist communities. To qualify the dual objectives in a single microalgae track a tentative flow sheet is shown in Fig 1, which is started with algae cultivation and ended with two products such as pure chromite and biodiesel.

lalabeharisukla@soauniversity.ac.in.
dpradhanmetal@gmail.com