

Phyto-treatment of Tannery Effluents by *Matricaria Chamomilla* L. Under Combined Application of Zerovalent Iron Nanoparticles and *Moringa Oleifera* L. Leaves Extract

**DR. MUJAHID FARID, PHD¹, UROOJ ANSAR MUGHAL²,
ZAKI UL ZAMAN ASAM² AND MOHSIN ABBAS²**

¹Department of Environmental Sciences, University of Gujrat

²University of Gujrat, Hafiz Hayat Campus, Gujrat, 50700,
Pakistan

Presenting Author: mujahid726@yahoo.com

Heavy metal contamination of the water and soil is an emerging problem around the globe. The study's main purpose was to assess the potential of *Matricaria chamomilla* L. to accumulate different heavy metals from tannery wastewater. Different concentration (0,25,50,100%) of tannery wastewater were applied to the plant with and without the combination of zerovalent iron nanoparticles (ZVI NPs) and moringa leaf extract. The plants were harvested and different agronomic traits, photosynthetic pigments, antioxidant enzymes, reactive oxygen species (ROS), electrolytic leakage (EL), heavy metals concentration and accumulation were recorded. Findings show that the agronomic traits and chlorophyll content of chamomile plant decrease with the addition of tannery wastewater. By adding moringa leaf extract and ZVI NPs improves plant traits and chlorophyll content was measured. Antioxidant enzymes, ROS and EL show a significant increase with the addition of tannery's wastewater along with leaf extract and nanoparticles. The addition of 100% tannery's wastewater the antioxidant enzymes and reactive oxygen species increase and electrolyte leakage (EL) significantly reduced. Our results showed highest concentration and accumulation of cadmium (Cd), Nickel (Ni) and lead (Pb) with 100% wastewater along with moringa leaves extract and zerovalent nanoparticles. The addition of moringa leaf extract and ZVI NPs showed coupling effect in increasing the uptake and accumulation of Ni, Pb and Cd. Our findings suggest that *Matricaria chamomilla* could be used for accumulation of heavy metals.