

## عنوان مقاله:

Green synthesis of Se nanoparticles and its effect on salt tolerance of barley plants

## محل انتشار:

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## خلاصه مقاله:

In this study, selenite ions were reduced to selenium nanoparticles using a leaf extract of barley (*Hordeum vulgare* L.) plants. Characterization of synthesized nanoparticles using Scanning Electron Microscopy (SEM) and UV-visible spectrophotometry indicated the formation of variable size of selenium nanoparticles, suggesting that leaf extract could form polydispersed nanoparticles. Then we used these synthesized selenium nanoparticles to mitigate salt stress in barley plants under hydroponic conditions. Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS) analyses suggested that the hydroponically nano-Se application resulted in direct accumulation of Se in the leaves of barley. Shoot growth was negatively affected by salinity levels up to ۱۰۰ mM, whereas this reduction was mitigated by application of exogenous Se nanoparticles. Our results indicated that high salinity stress decreased the activity of superoxide dismutase (SOD), and enhanced the levels of malondialdehyde (MDA) in the leaves of barley seedlings, whereas application of Se nanoparticles increased total phenolic levels, and also resulted in a significant reduction of MDA (a marker for the ROS-mediated cell membrane damage) contents, which could influence the metabolism and be responsible for the increasing shoot dry weight. These results provided the first evidence that the green Se nanoparticles promote the growth of barley seedlings under salt stress.

## کلمات کلیدی:

antioxidant defense system, Green Nano-Se, *Hordeum Vulgare* L, Malondialdehyde, Salt stress, Shoot Growth

## لینک ثابت مقاله در پایگاه سیویلیکا:

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