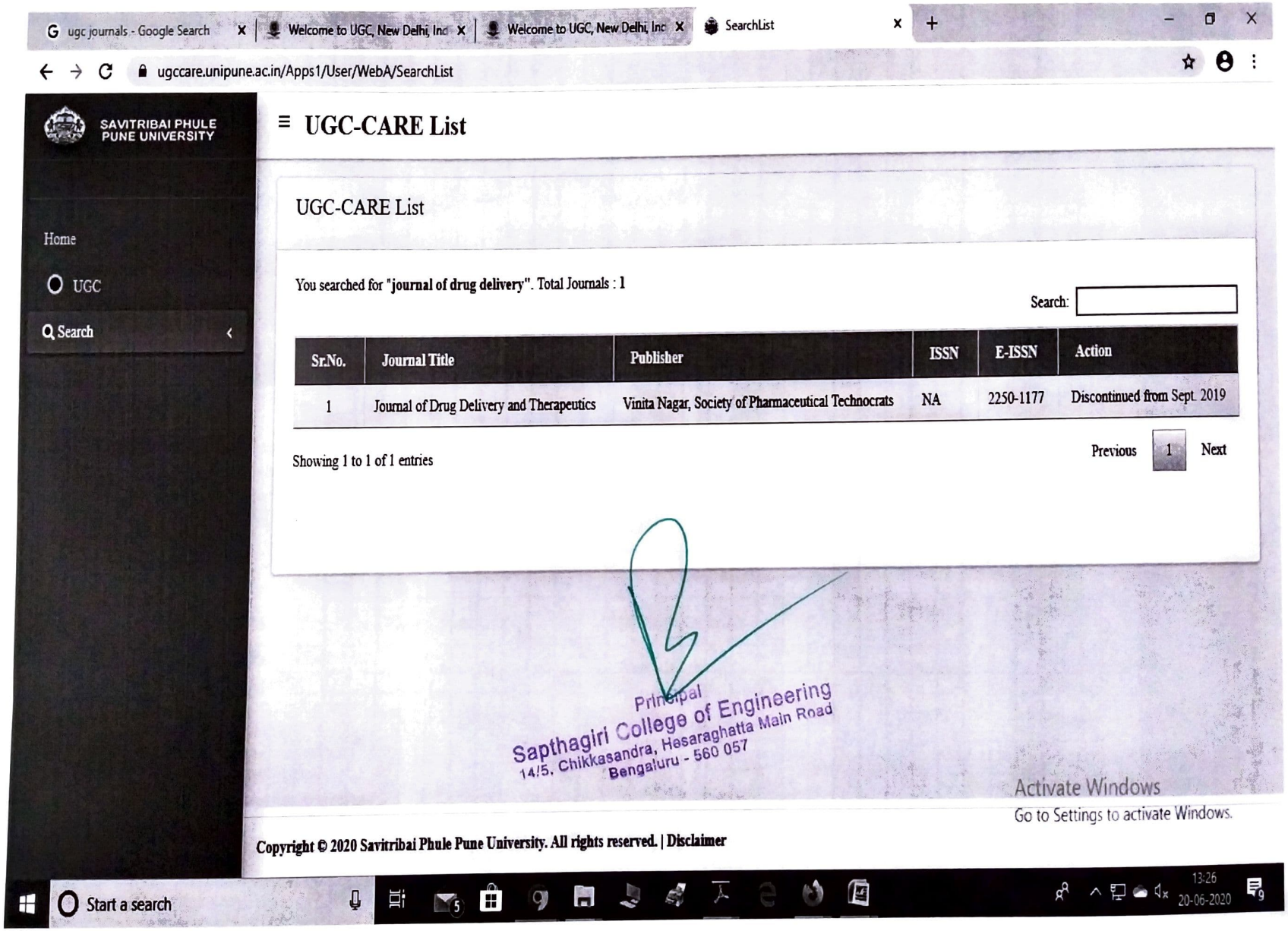
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Nano-cuprous oxide enhances seed germination and seedling g *Lycopersicum esculentum* plants

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ABSTRACT

This study was carried out to determine the influence of cuprous oxide nanopartides (Cu_2O NPs) biosynthesised fron *montana* on the tomato *Lycioersicum esculentum* seed germination, seedling growth and vigour index. Here we exa phytotoxic effect of Cu_2O NPs (0-160ppm) on tomato seeds resulted in dosage dependent response. The highest germ was observed at 20ppm Cu_2O NPs, however, above 20ppm Cu_2O NPs, there is a reduction in the seed germination. Th increased root and shoot elongation up to 20ppm Cu_2O NPs concentration, further increase in NPs concentration ca plants growth and development. The leaf pigments showed increasing trend in tomato plants after treatment with compared to control. Phytotoxicity of Cu_2O NPs in tomato seedlings demonstrated by lower contents of chlorophyll a, l The study of effect on antioxidant enzymes showed increases in activity with increase in Cu_2O NPs concentration for dismutase (SOD) and Glutathione Peroxidase (GPX) out of five enzymes treated. High antioxidant activity of enzymes i lipid peroxidation and decrease in free radical scavenging activity by the DPPH. The activity of Catalase, Pheny Als Phenol Oxidase enzymes were found to increase up to 20ppm as compared to control and above this, all three en activity. Uptake of Cu_2O NPs nanoparticle by tomato seedlings was confirmed by atomic absorption spectroscopy.

Keywords: Nano-Cuprous Oxide, *Flacourtia montana*, Tomato, antioxidant enzymes, lipid peroxidation

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INTRODUCTION

Nanomaterials have many applications in agriculture in molecular level between nanopa systems are largely unknown[8].