**Rapid and green microwave-assisted synthesis of Zinc Oxide nanoparticles using aqueous Phoenix Dactylifera L. (Date palm) wood extract and evaluation of antibacterial and antifungal activities**

Ibtissam Charti1\*, Adil Eddahbi 2, Younes Abboud1 and Abdeslam El Bouari1

1 Laboratoire de Physico-Chimie des Matériaux Appliqués, Faculté des Sciences Ben M’sik, Université Hassan II Mohammedia-Casablanca Morocco

2 Laboratoire de la Physique de la Matière Condensée (LPMC), Mohammedia Faculté des Sciences Ben M’Sik, Université Hassan II Mohammedia-Casablanca Morocco

\* Email: charti.ibtissam@gmail.com

Nanoparticles exhibit completely new or improved properties with larger particles of the bulk materials and these novel properties are derived due to the variation in specific characteristics such as size, distribution and morphology of the particles. Nanoparticles present a higher surface area to volume ratio with decrease in the size, distribution and morphology of the particles [1]

Recently, synthesis of NPs via eco-friendly routes have become popular among researchers due to its low cost, synthesis in ambient atmosphere, non-toxicity, environmental compatibility etc. and ease of applications as the resulting particles are highly soluble in water, biocompatible, and devoid of toxic stabilizers.[2]

Among the diverse biosynthetic approaches, the use of plant extracts has compensation such as easily available, safe to handle and possess a broad viability of metabolities. The phytochemicals responsible for the synthesis of nanoparticles are terponoids, flavonoids, carbohydrates, saponins, alkaloid and protein.[3]

In the present study, Zinc Oxide nanoparticles (ZnO NP) were synthesized from palm date wood extract (*Phoenix dactiferia* L.) in a rapid and eco-friendly microwave-assisted synthesis from zinc nitrate solution.

Microwave parameter (irradiation time),wood extract and silver nitrate concentration were optimized. The UV–visible spectroscopy was used to monitor the ZnO NP formation through sampling at time intervals, phytosynthesized zinc oxide nanoparticles dimensions were characterized using X-ray diffraction analysis. The green synthesized nanoparticles exhibited potent antibacterial activity against the pathogenic bacteria, as evidenced by their zones of inhibition and also a good antifungal activity against the Candida fungus.