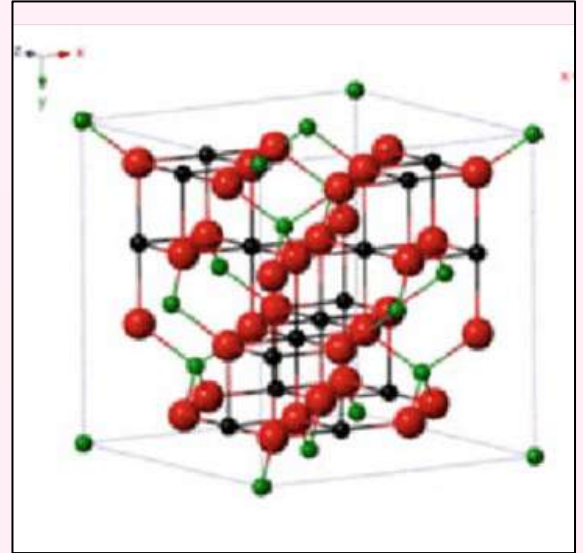


## INTRODUCTION

- MNPs have wide application in nanomedicine such as drug delivery, magnetic hyperthermia, MRI contrast agent and tissue scaffolds.
- Surface coating of MNPs is essential to prevent agglomeration, oxidation, reduce toxicity and improve MNP pharmacokinetics and biodistribution.

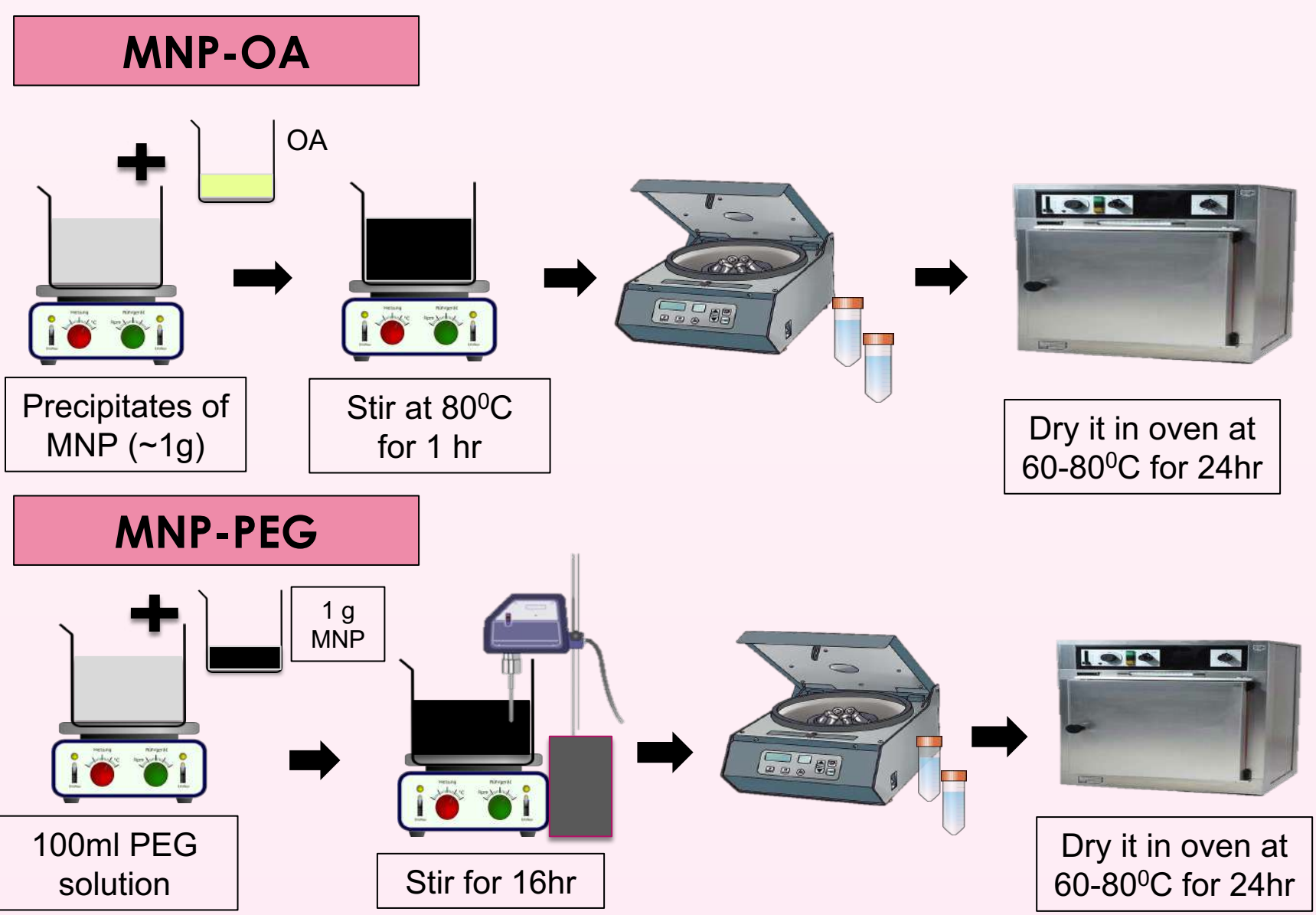


## OBJECTIVES

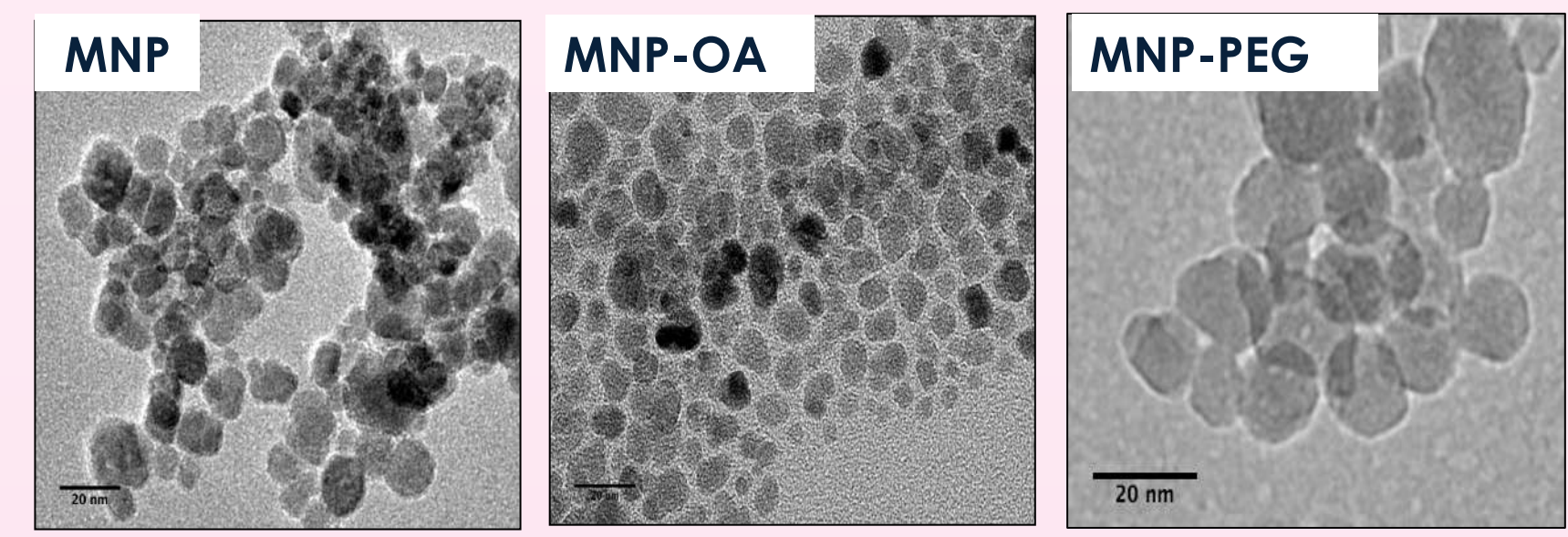
- To synthesize and characterize magnetic nanoparticle (MNP) coated with oleic acid (OA) and polyethylene glycol (PEG) for potential targeted drug delivery vector.
- To investigate the cytotoxicity of coated MNPs at various concentration on both human lung fibroblast (MRC-5) and human lung carcinoma (A549) using XTT assay.

## METHODOLOGY

MNPs synthesised using co-precipitation method were coated with OA and PEG 2000 based on several different ratio. OA: (1:6) (1:8) (1:10) and PEG : (1:1) (1:2) (1:3)

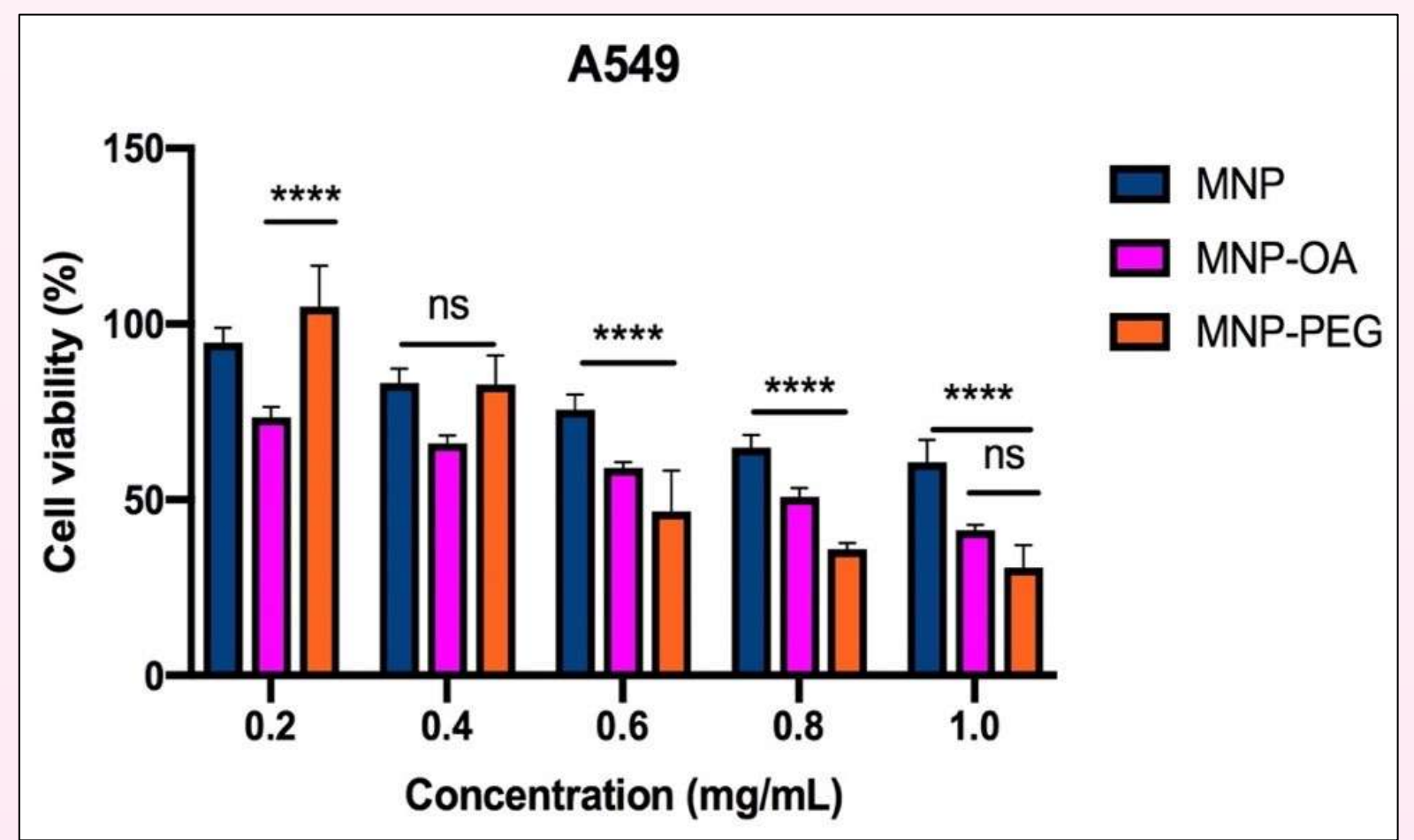
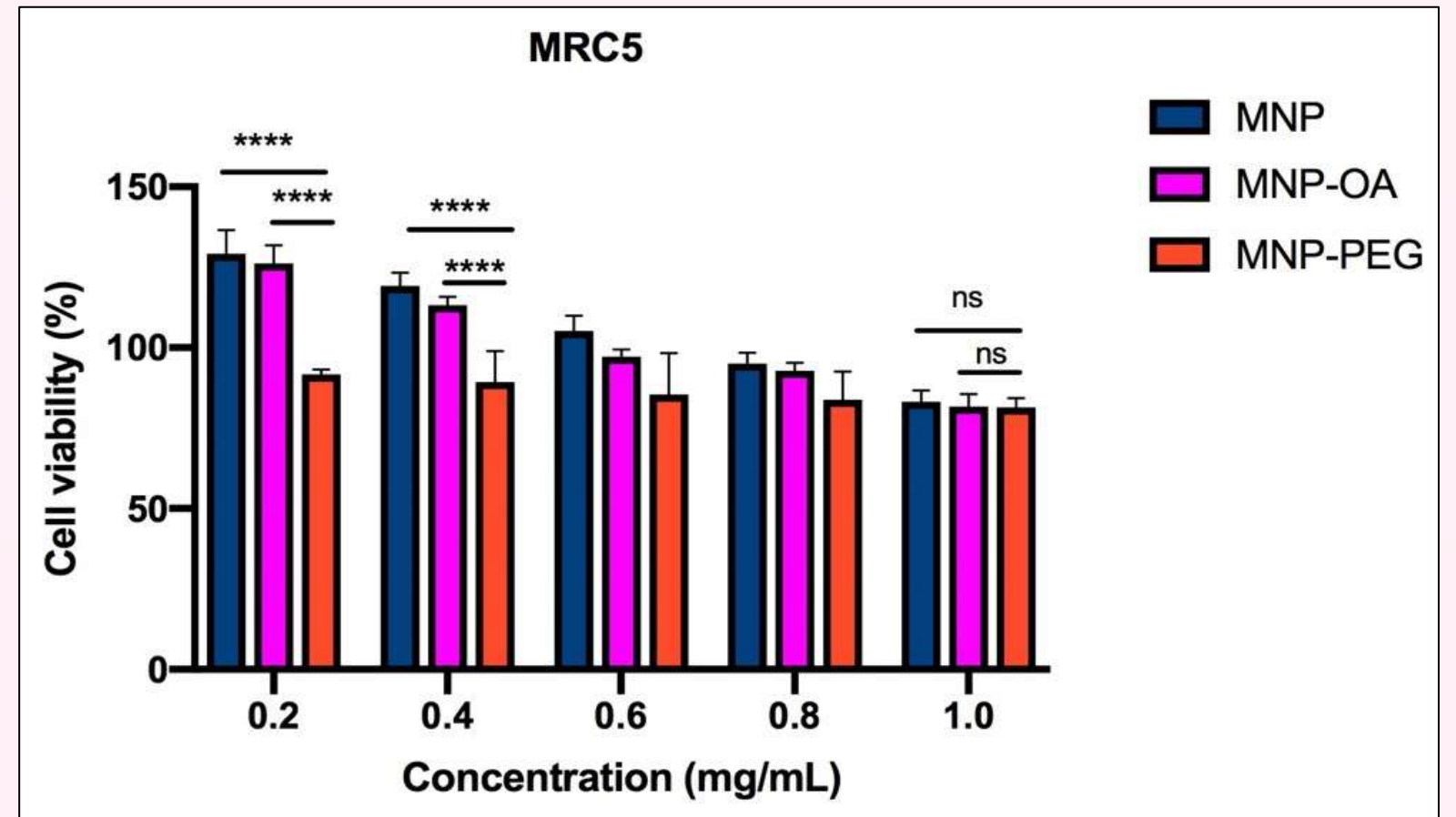


## RESULTS & DISCUSSION



MNP	9.7 ± 1.7 nm
MNP-OA	7.1 ± 1.3 nm
MNP-PEG	7.2 ± 1.1 nm

## XTT assay



Cell types/ Materials	MNP	MNP-OA	MNP-PEG
<b>MRC5</b>	31.36 ± 3.87	17.68 ± 1.71	4.27 ± 1.69
<b>A549</b>	1.72 ± 0.34	0.76 ± 0.04	0.65 ± 0.07

## CONCLUSIONS & RECOMMENDATIONS

- All three MNPs are not toxic against normal human lung fibroblast with cell viability >80% even at the highest concentration.
- MNP-PEG are the most toxic against A549 cells followed by MNP-OA, which show good anticancer properties.
- The in vitro test of bare and coated MNPs can be tested on precision cut lung slices (PCLS) model.

## REFERENCES

Tang, C., Meng, F., Pang, X., Chen, M., Zhou, L., Lu, Z., & Lu, Y. (2020). Protective effects of Lactobacillus acidophilus NX2-6 against oleic acid-induced steatosis, mitochondrial dysfunction, endoplasmic reticulum stress and inflammatory responses. *Journal of Functional Foods*, 74, 104206.

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