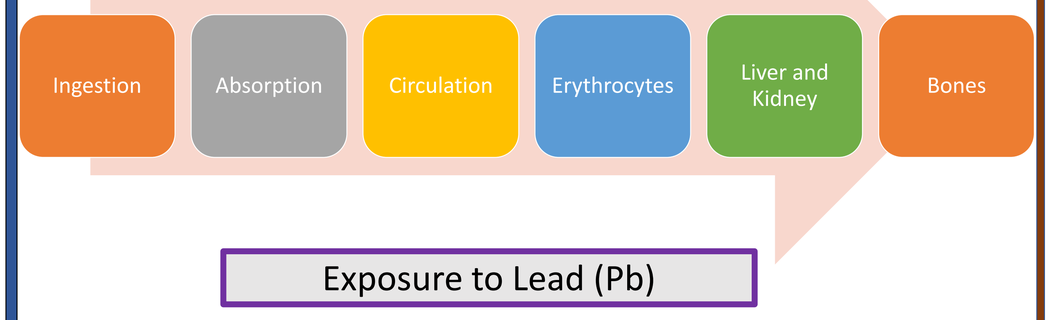
Abstract ID : MRCHS097

MANIPAL SCHOOL OF LIFE SCIENCES
MANIPAL
(A constituent unit of MAHE, Manipal)

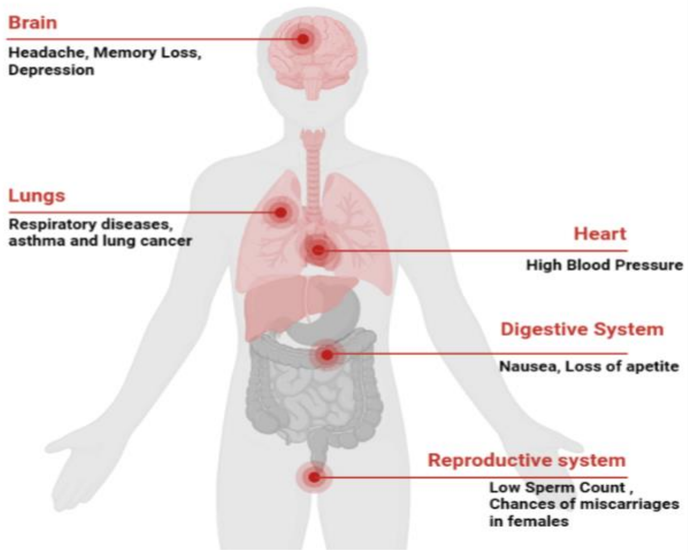
# AMELIORATIVE EFFECT OF NARINGENIN ON LEAD INDUCED CYTOTOXICITY ON HUMAN EMBRYONIC KIDNEY CELLS (HEK293)

Narayan Dhona[1], Rekha K. Narasimhamurty[2], Herman S D'Souza[2*]
[1]Department of Biotechnology, Manipal School of Life Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, 576104, India
[2]Department of Radiation biology and toxicology, Manipal School of life Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, 576104, India
[1]E-mail: dhonanarayan@outlook.com

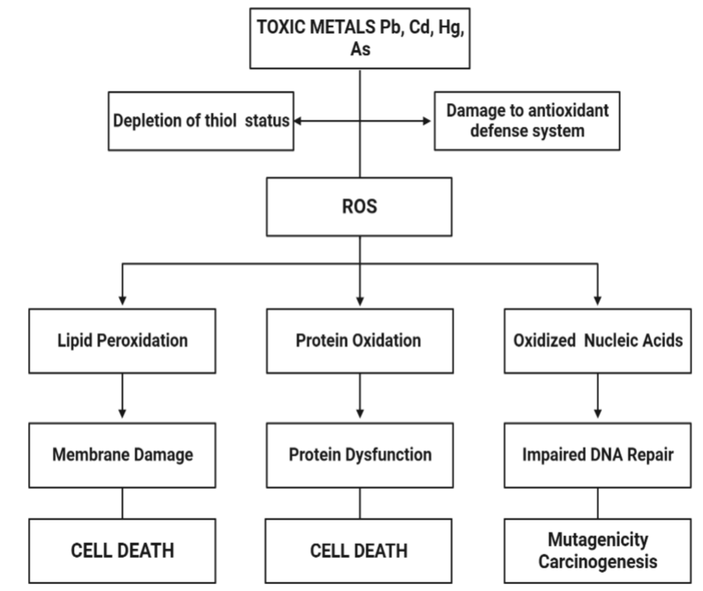
## Introduction:



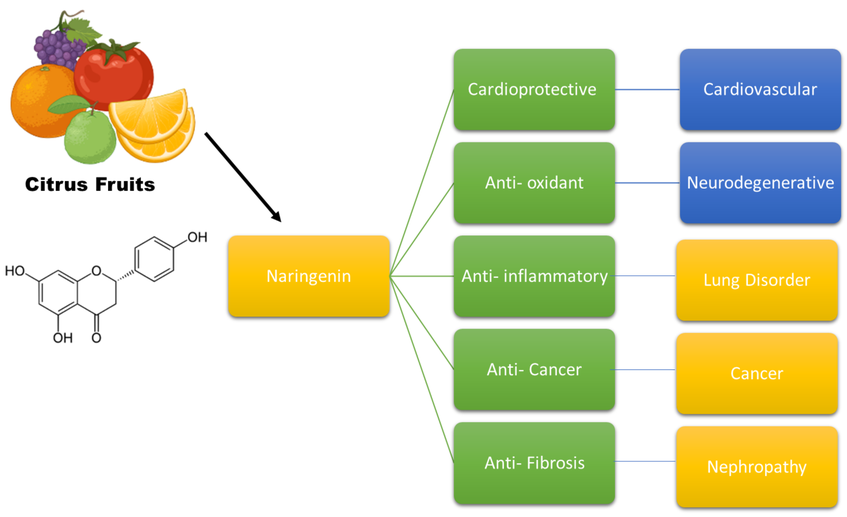

Exposure to Lead (Pb)




Effects of Lead on the Human Body




Mechanism of Lead induced toxicity

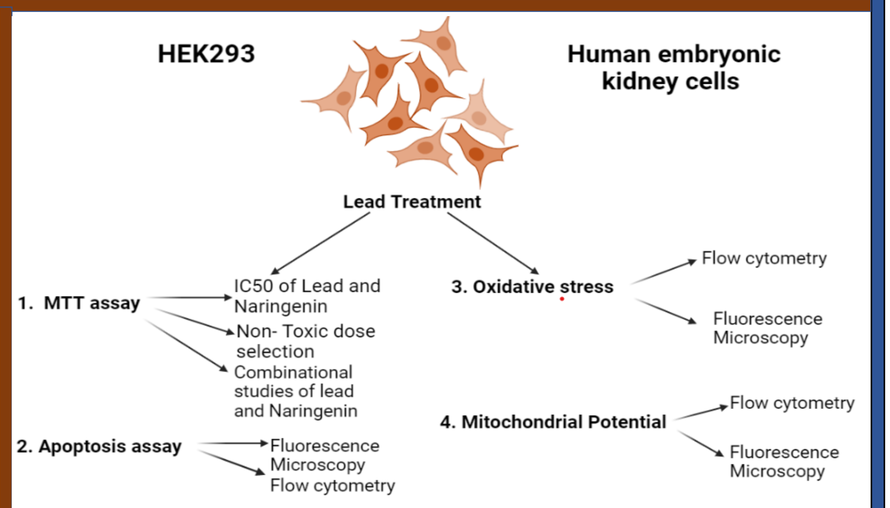



Pharmacological activities of Naringenin

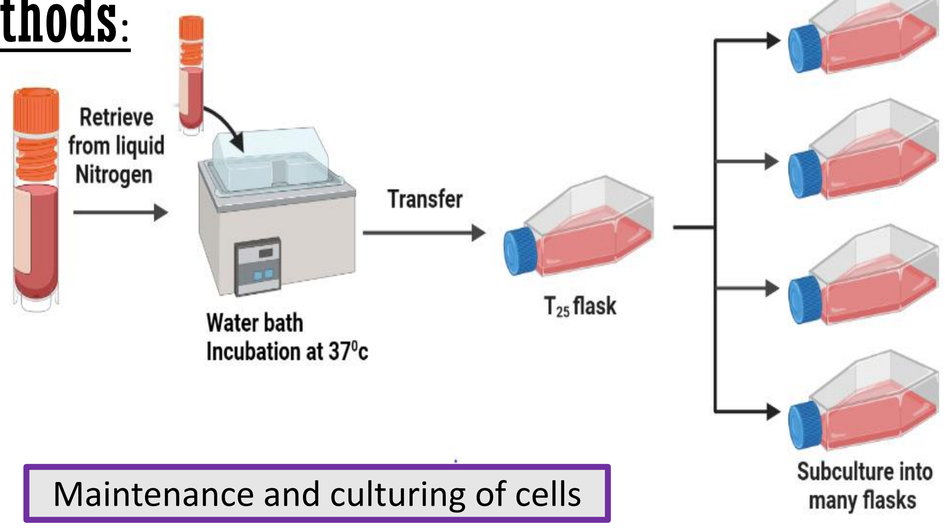
**AIM:** To study the ameliorative effect of naringenin on lead induced cytotoxicity on human embryonic kidney cells (HEK293).

**OBJECTIVES:**

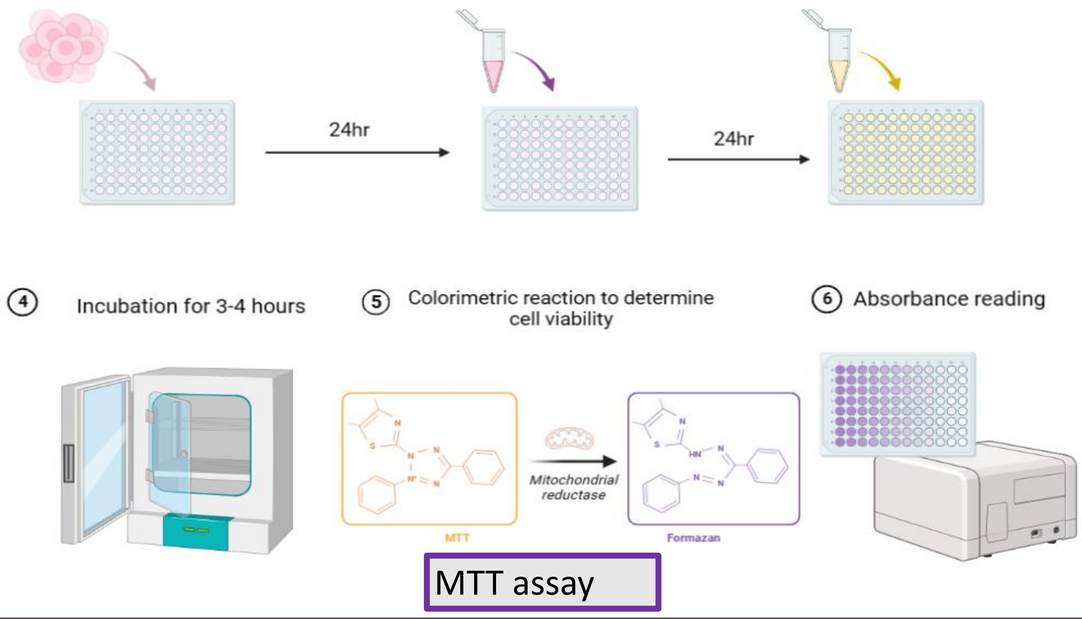
- Maintenance and culturing of HEK293 cells
- Determining the IC50 of lead using MTT assay
- Evaluating the cytotoxic effect of lead on HEK293 cells
- Evaluating the ameliorative effect of Naringenin on lead induced cytotoxic damage




## Methods:

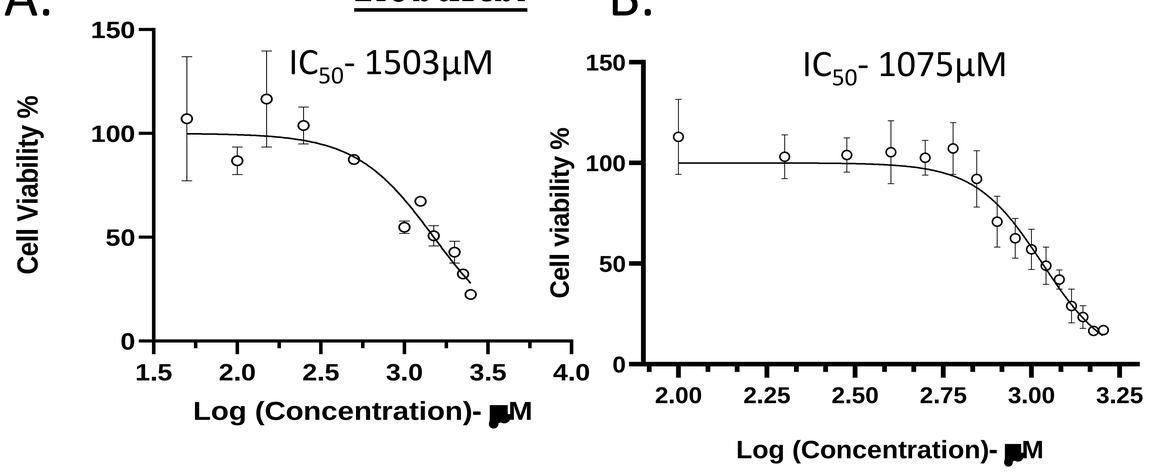



Maintenance and culturing of cells




MTT assay

## Results:




Graphs indicating changes in Cell Viability % upon treatment with A) Lead (24 hours) (50µM- 2500µM) and B) Naringenin (24 hours) (10µM- 1600µM)

(Data represented as Mean with SEM; n=2)

## Conclusion:

1. This research seeks to use the HEK293 cell line to analyze the cytotoxic effects of Pb
2. This study anticipates that Pb will trigger a rise in ROS, a decrease in the mitochondrial potential and lead to apoptosis
3. Furthermore, we speculate that the ameliorative effect of naringenin might mitigate the Pb-induced damages to the cells

## References:

1. Rathi, V. K., Das, S., Parampalli Raghavendra, A., & Rao, B. S. S. (2017). Naringin abates adverse effects of cadmium-mediated hepatotoxicity: An experimental study using HepG2 cells. Journal of biochemical and molecular toxicology, 31(8), 10.1002/jbt.21915. https://doi.org/10.1002/jbt.21915
2. Gurer, H., & Ercal, N. (2000). Can antioxidants be beneficial in the treatment of lead poisoning?. Free radical biology & medicine, 29(10), 927–945. https://doi.org/10.1016/s0891-5849(00)00413-5
3. Zhang, H., Li, W., Xue, Y., & Zou, F. (2014). TRPC1 is involved in $Ca^{2+}$ influx and cytotoxicity following $Pb^{2+}$ exposure in human embryonic kidney cells. Toxicology letters, 229(1), 52–58. https://doi.org/10.1016/j.toxlet.2014.05.017
4. Ozkaya, A., Sahin, Z., Dag, U., & Ozkaraca, M. (2016). Effects of Naringenin on Oxidative Stress and Histopathological Changes in the Liver of Lead Acetate Administered Rats. Journal of biochemical and molecular toxicology, 30(5), 243–248. https://doi.org/10.1002/jbt.21785

## Acknowledgements

We would like to thank Manipal School of Life Sciences and Manipal Academy of Higher Education for providing us with the infrastructure to work on this project

Presented at MRC-2023, Manipal Academy of Higher Education, Manipal