

Magnetite Nanoparticles as a Novel Single Dose Treatment for Iron Deficiency Anemia

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Abstract

Biocompatible Magnetite nanoparticles (MNP) as a new modality for treatment of Iron deficiency Anemia (IDA)

Animal trials studies reveal that a single dose of MNP is sufficient to cure IDA either administrated Intra- Peritoneal (IP) or oral.

Within only 10 days, administration of a single dose increases the Hemoglobin concentration (Hb) from 7 g/dL to 14 g/dL.

RBCs counts from $3.2 \times 10^6/\text{mm}^3$ up till $6.5 \times 10^6/\text{mm}^3$

Bone-marrow gives strong evidence that the used MNP stimulate the Erythropoiesis

The Myeloid-Erythroid ratio (M/E) decrease from 1.3 till 0.3

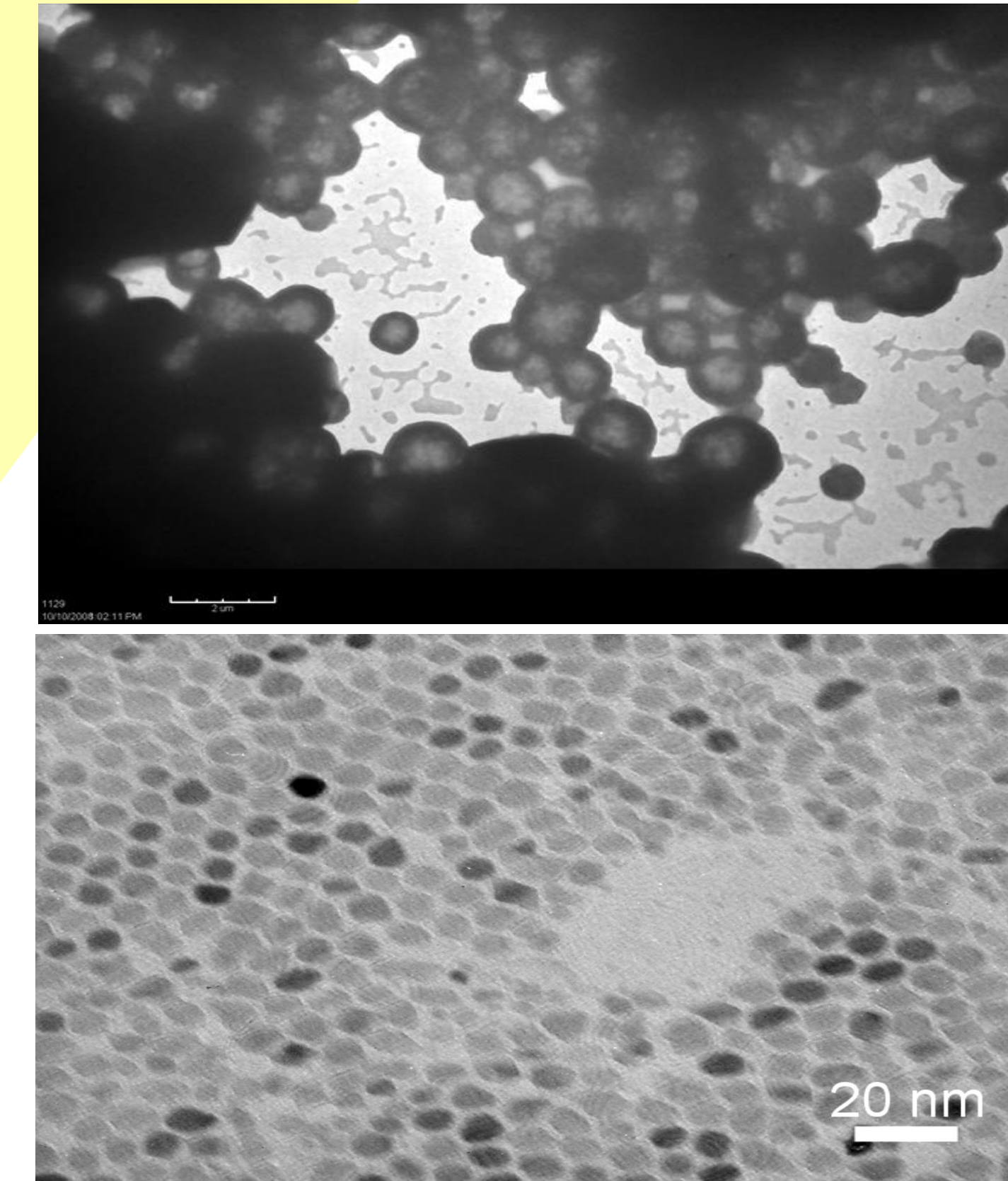
No any apparent toxicity and it dose not affect the homeostasis



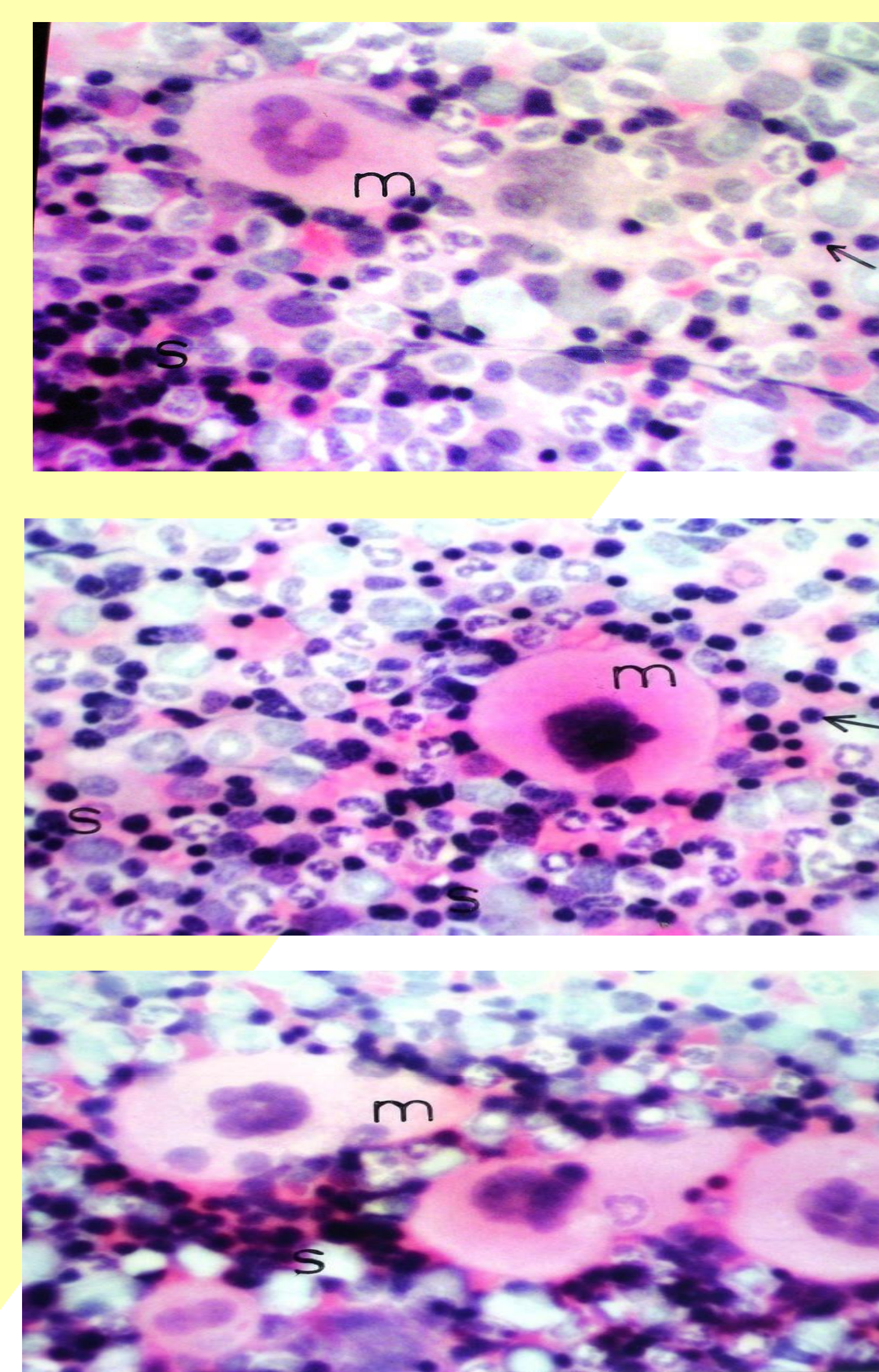
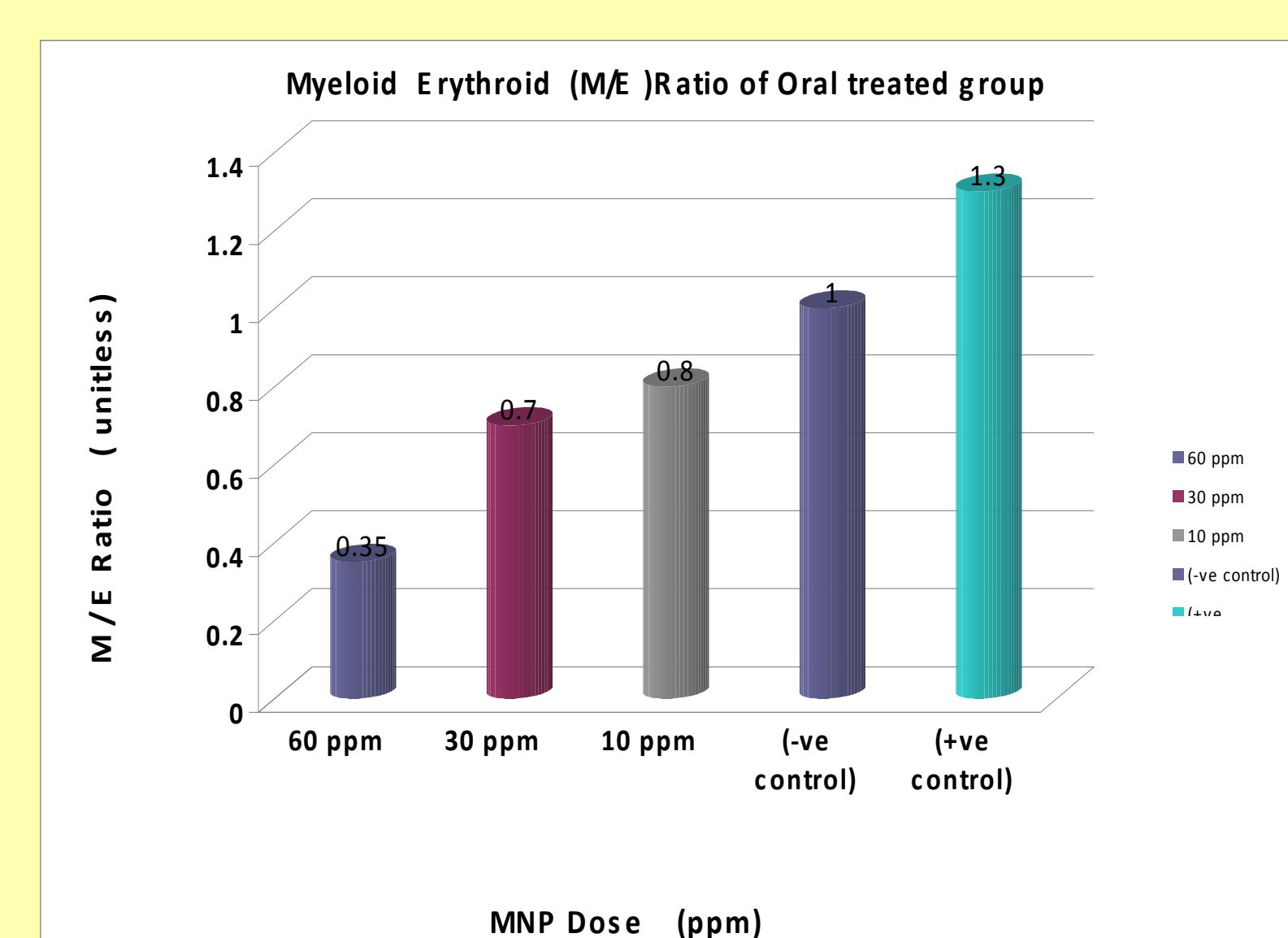
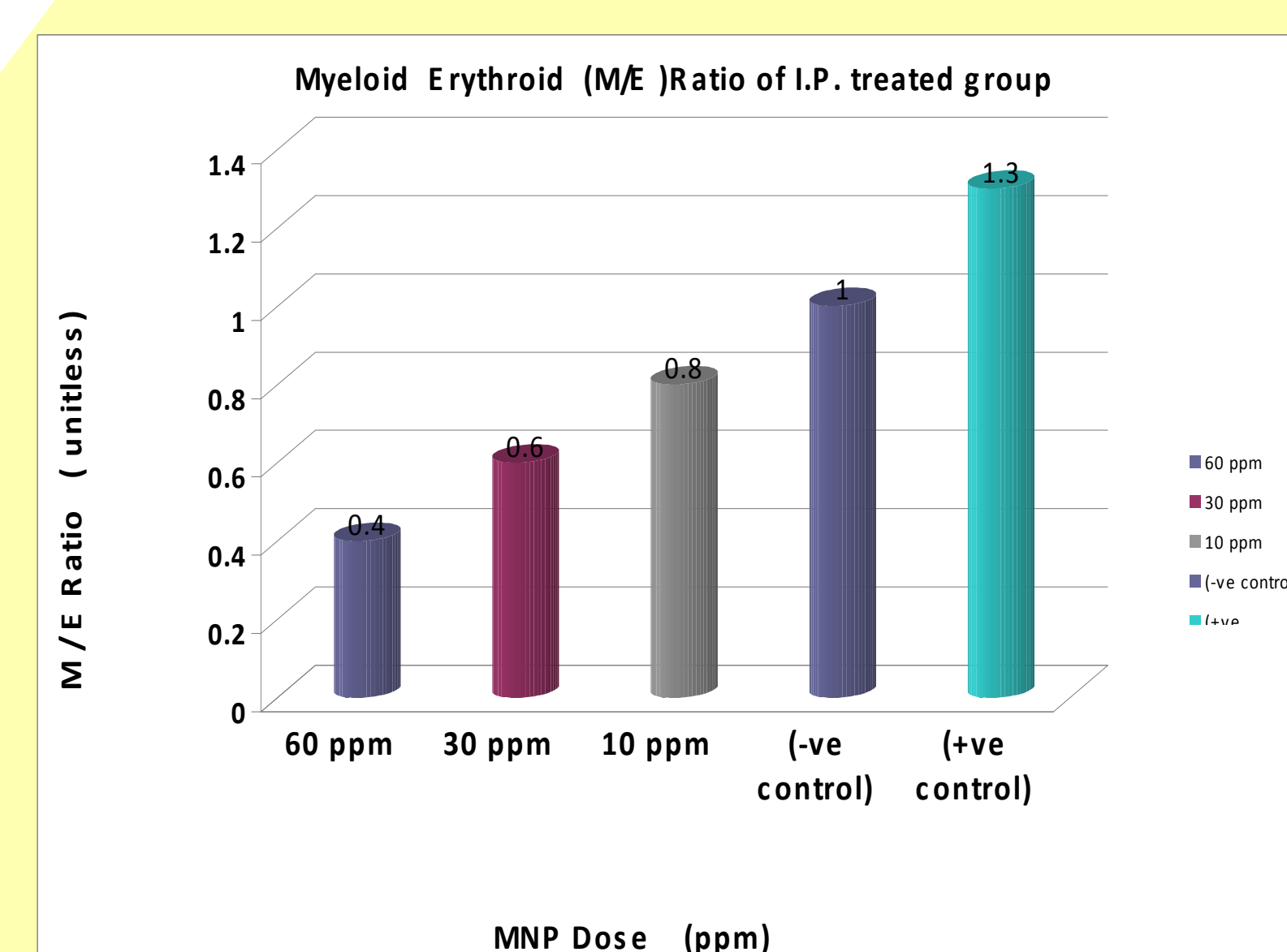
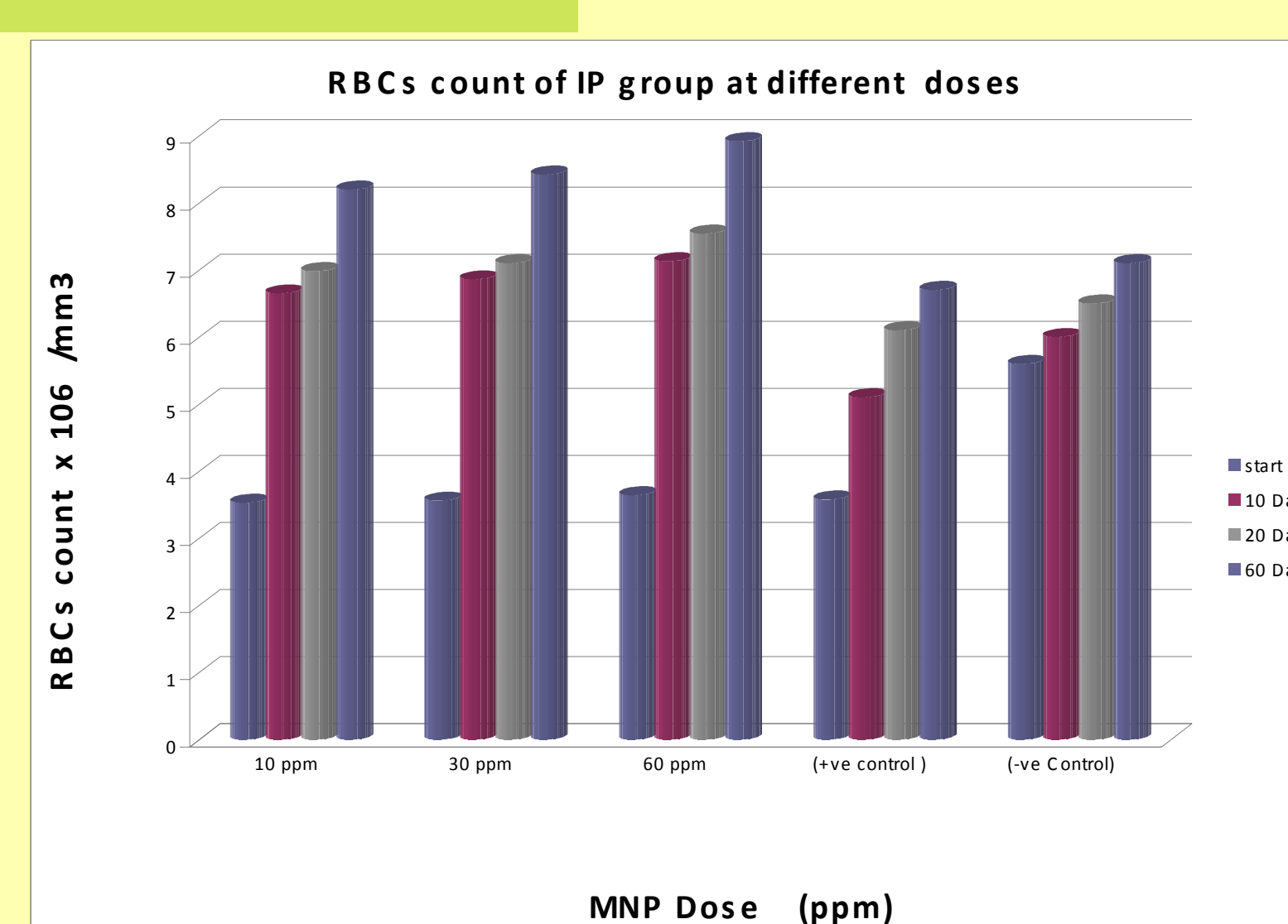
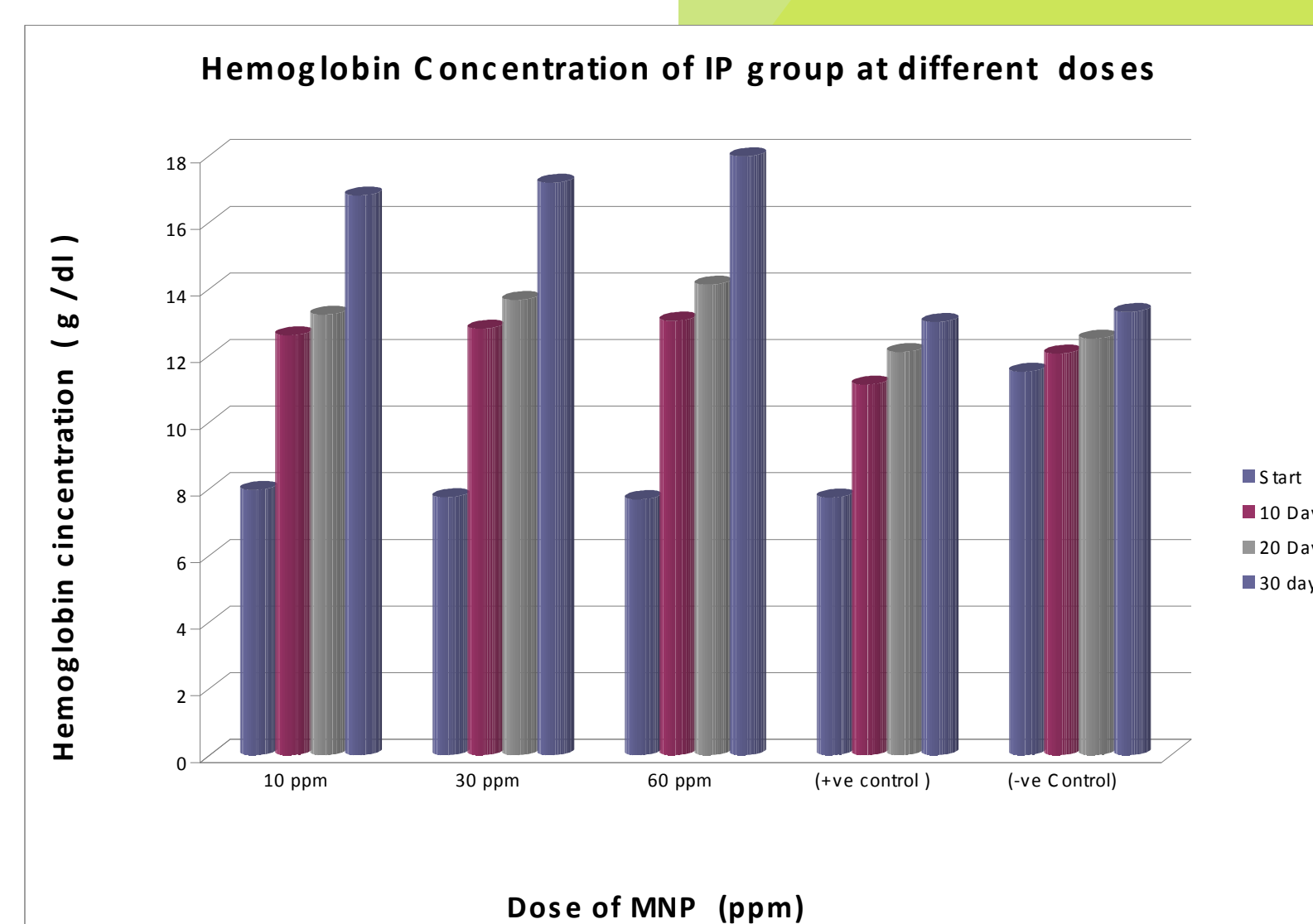
Bronze Medal award
South Korea, 2012



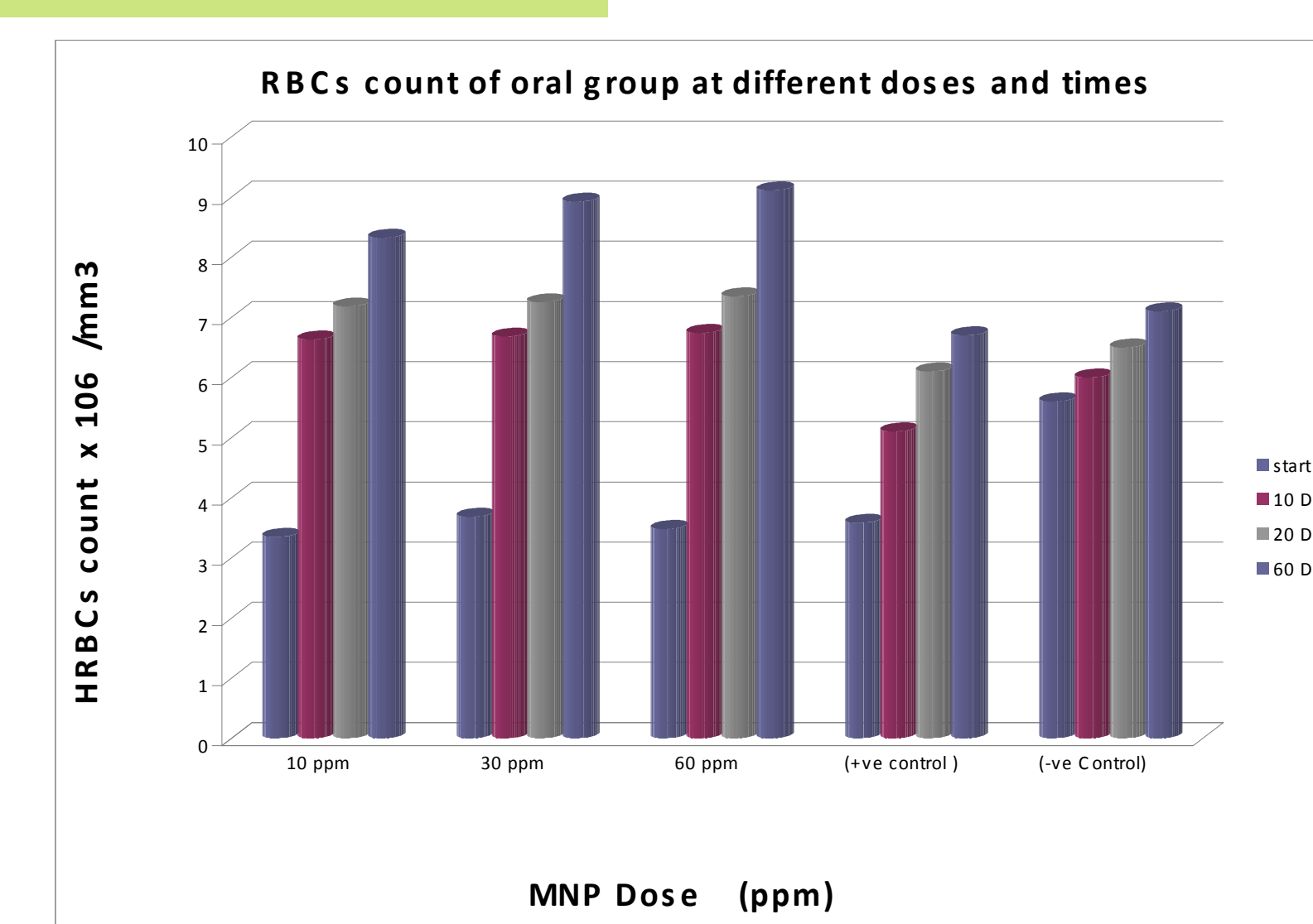
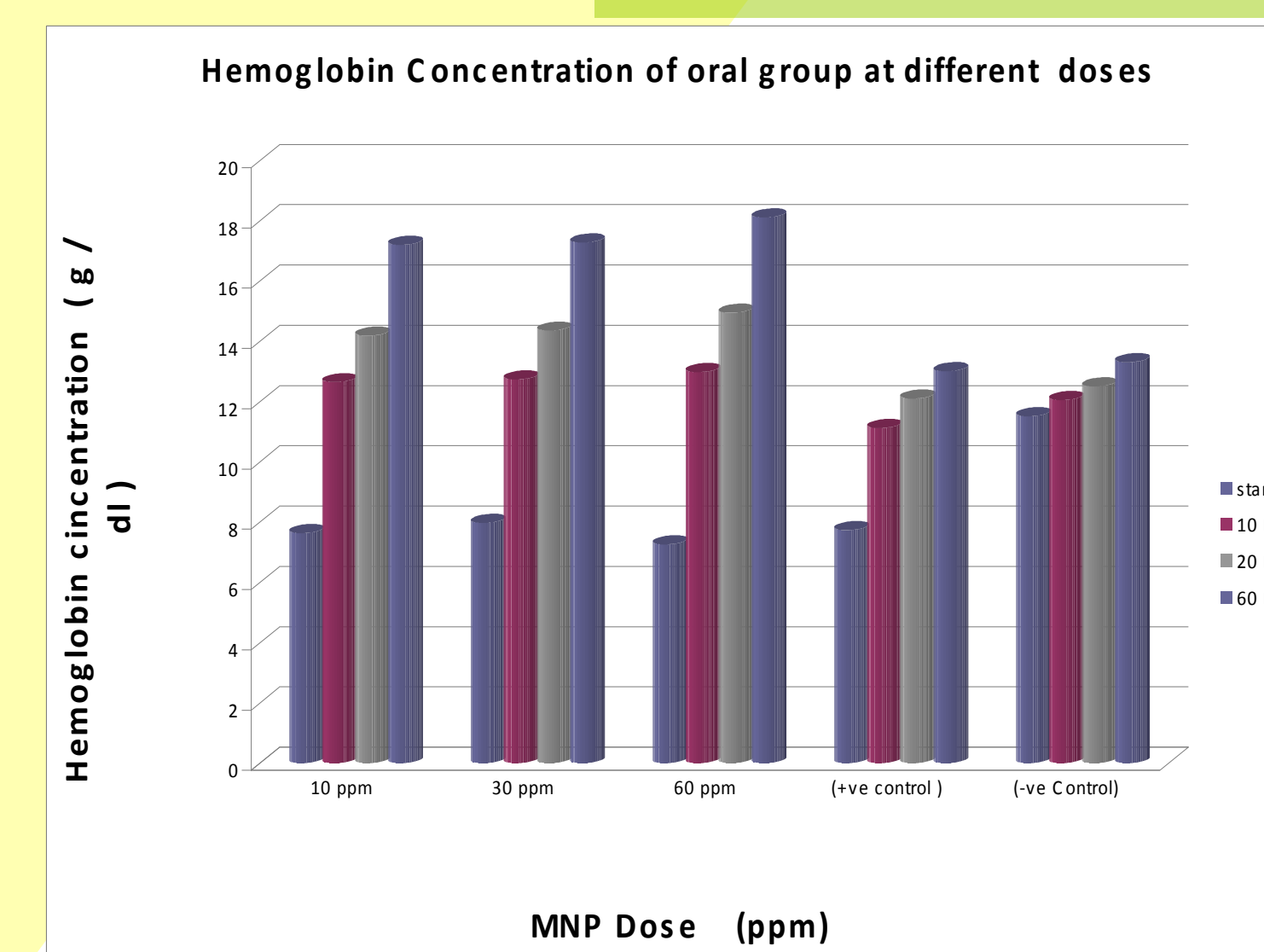
State Award
Egypt, 2017



I.P. Administration

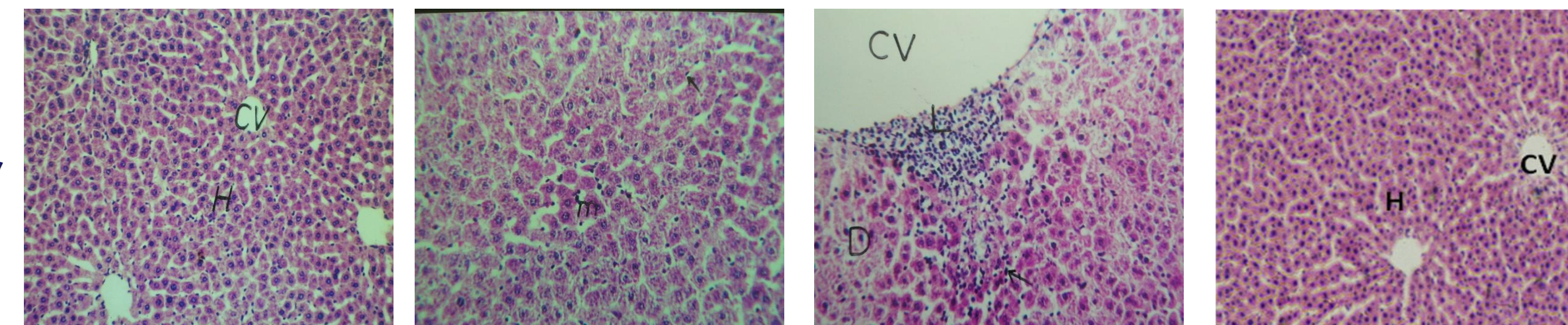


Oral Administration

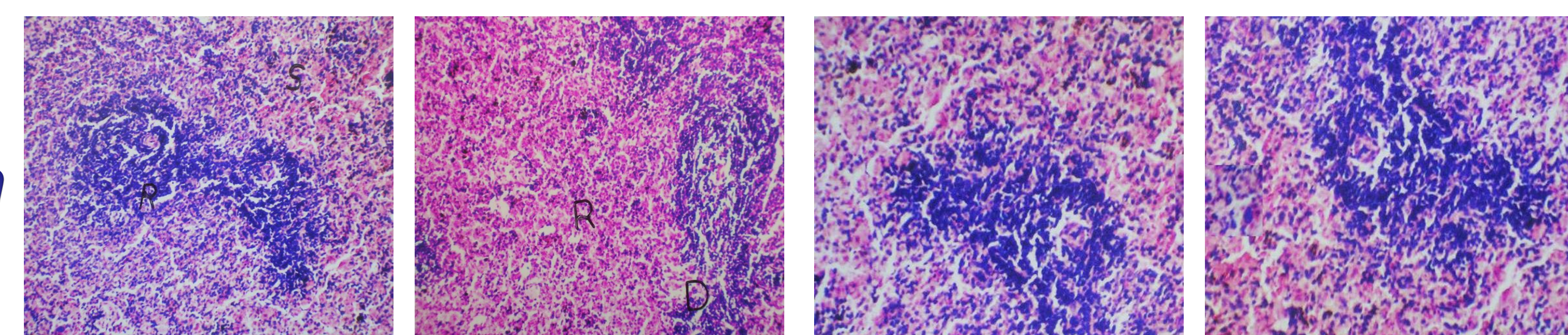


Control Acute Subacute Subchronic

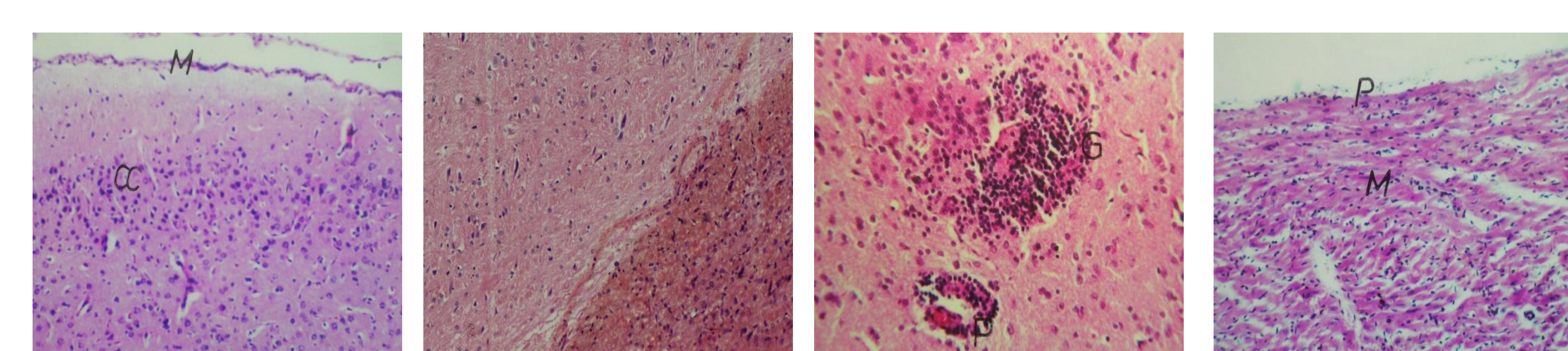
Liver



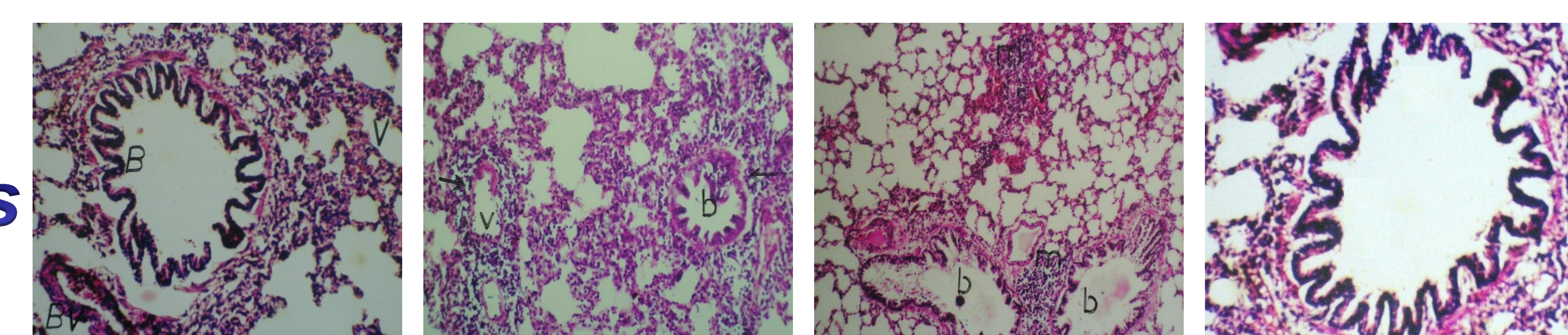
Spleen



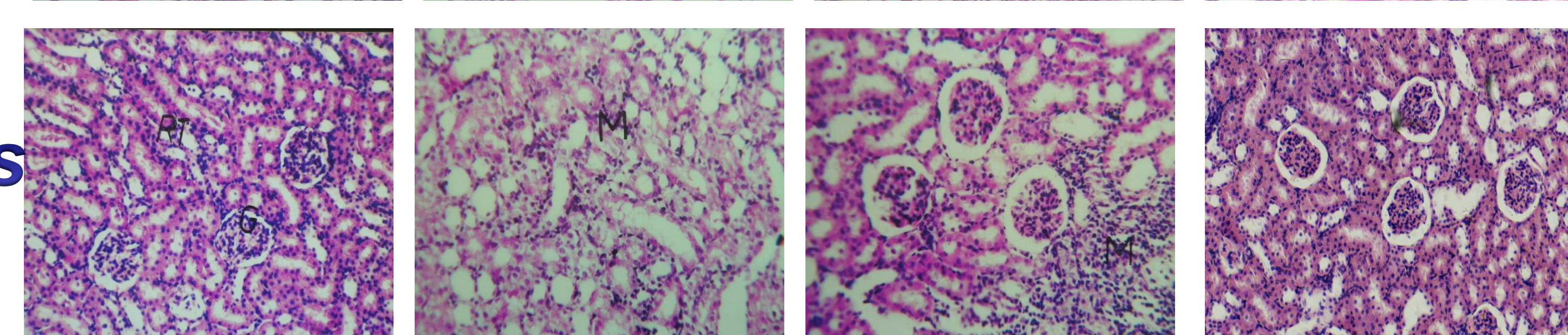
Brain



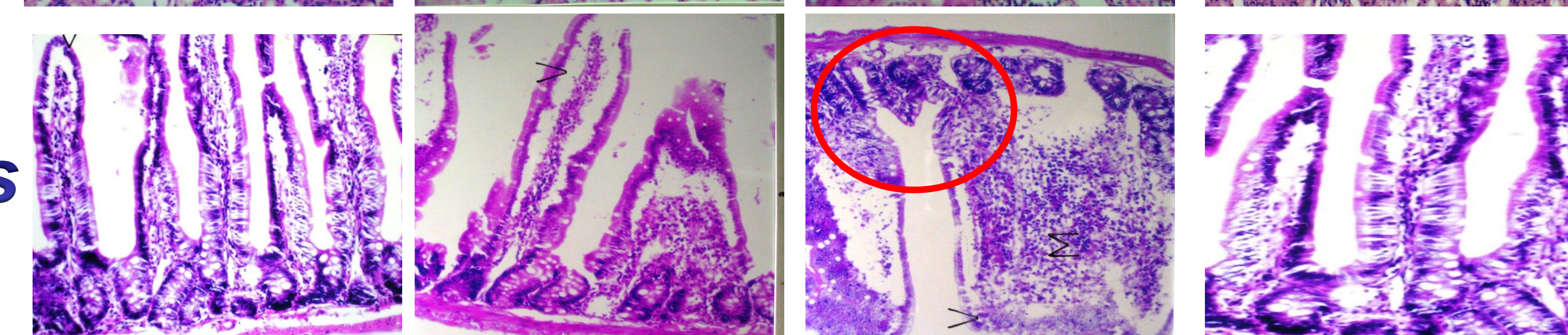
Lungs



Kidneys



Intestines



Conclusion

❖The marked efficiency of the prepared magnetite nanoparticles in increasing the Hb and RBCs in a significant amount,

❖That may be suggested to be more effective and rapid treatment of anemia especially in patients with Iron Deficiency Anemia. The treatment by the prepared magnetite nanoparticles did not induce any apparent toxicity.

References

1. Taher Salah, Mona B. Mohamed, Hossam Kamel, Mahmoud H. Abdel Kader, "Magnetite Nanoparticles as a Novel Single Dose Treatment for Iron Deficiency Anemia"; international Patent, PCT, march 2010, WO 2010/034319 A1
2. . Taher Salah, Mona B. Mohamed, Thanaa. F. Mohamady, Mahmoud H. AbdEl kader . Submitted to Toxicology Letters, (Jun 2010)
3. Ola Heikal, Iman Gomaa, Taher Salah, Toxicology Letters 189S (2009) S57–S273.

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