

Results

Observations of the experimental animals during the present study revealed that rabbits treated with lead acetate suffered from mild anorexia, easy hair shading especially during handling and dullness. Also these signs were observed in group 3, 4 and 5 especially at the end of the experiment in comparison with the control group. The 90 days duration of the experiment indicates the sub-chronic exposure for experimental animals to lead acetate.

Hematological and Biochemical changes:

The protective role of the oral administration of vitamin E and/or methionine against side effects of lead on the hematological parameters of experimental animals, i.e., levels of RBCs, Hb, PCV%, MCV, MCH, MCHC and reticulocyte % in adult male rabbits for 90 days, were shown in table 1.

Results revealed that Lead exposure led to non-significant reduction of Hb concentration, PCV%, and RBCs ($\times 10^6/\mu\text{l}$) count; significant reductions of MCH, MCV, MCHC in comparison with control

group (69.130 ± 0.85 pg, 21.05 ± 0.25 fl, 30.48 ± 0.27 g/dl; versus 12.05 ± 0.51 pg, 36.61 ± 1.13 fl and 5.02 ± 0.09 g/dl; respectively) ($P < 0.05$); and significant elevation of reticulocyte % ($1.60 \pm 0.25\%$). The same results were observed from rabbits administered methionine against lead.

Administration of vitamin E alone against lead for 90 days has led to non-significant reduction of Hb, PCV and total RBCs (11.06 ± 0.46 g/dl, $34.34 \pm 1.6\%$, $4.85 \pm 0.25 \times 10^6 \text{ RBCs}/\mu\text{l}$; respectively); significant elevation of MCV, MCH and MCHC (71.11 ± 1.4 pg, 22.90 ± 0.54 fl and 32.25 ± 0.27 g/dl); and significant decrease in reticulocyte % ($3.61 \pm 0.31\%$) in comparison with group administered lead.

On the other hand administration of methionine mixed with vit. E against Lead had succeeded to return back Hb, PCV, RBCs, MCHC, and reticulocyte % to the semi normal values, (12.16 ± 0.50 g/dl, $37.71 \pm 1.75\%$, $5.54 \pm 0.27 \times 10^6 \text{ RBCs}/\mu\text{l}$, 32.30 ± 0.36 g/dl, $3.45 \pm 0.25\%$; respectively (Table 1).

Table 1. Lead Induced Changes on Hb, PCV, RBC Count and Indices and Reticulocytes Count

Parameter	Rabbit Groups				
	G1 (N = 6)	G2 (N = 6)	G3 (N = 6)	G4 (N = 6)	G5 (N = 6)
Hb (g/dl)	12.050 ± 0.517^a	11.017 ± 0.485^a	11.450 ± 0.287^a	11.067 ± 0.467^a	12.167 ± 0.508^a
PCV (%)	36.617 ± 1.138^a	36.167 ± 1.427^a	36.833 ± 0.610^a	34.433 ± 1.631^a	37.717 ± 1.751^a
RBCs ($\times 10^6/\mu\text{l}$)	5.025 ± 0.099^{ab}	5.252 ± 0.251^{ab}	5.350 ± 0.127^{ab}	4.850 ± 0.250^b	5.548 ± 0.270^a
MCV (fl)	72.850 ± 1.058^a	69.133 ± 0.852^b	69.767 ± 0.426^b	71.117 ± 1.455^{ab}	68.083 ± 0.812^b
MCH (pg)	23.967 ± 0.775^a	21.050 ± 0.275^c	21.550 ± 0.148^{bc}	22.900 ± 0.542^{ab}	22.000 ± 0.284^{bc}
MCHC (g/dl)	32.867 ± 0.656^a	30.483 ± 0.387^b	30.833 ± 0.275^b	32.250 ± 0.279^a	32.300 ± 0.361^a
Reticulocytes (%)	1.602 ± 0.252^d	7.793 ± 0.351^a	5.337 ± 0.292^b	3.617 ± 0.315^c	3.458 ± 0.250^c

Different small letters horizontally denotes significant Differences between groups at $P < 0.05$

Table 2 illustrated analysis of the data obtained from the present study, showing the non significant changes of total WBC count between different groups. On the other hand, after administration of lead there was a significant elevation of Neutrophils which correlated with a significant reduction of Lymphocytes ($P < 0.05$). These abnormal changes were corrected in groups treated with Vit. E and/or methionine. After 90 days of lead administration, serum iron

increased significantly in the four studied groups (G2, G3, G4 and G5): (299.45 ± 6.56 , 211.5 ± 7.36 , 226.90 ± 10.66 and 270 ± 8.69 $\mu\text{g}/\text{dl}$; respectively) in comparison with control group (193.25 ± 6.56 $\mu\text{g}/\text{dl}$). Marginal reduction of Ferritin concentration after lead administration was observed in group 1 (0.15 ± 0.03 $\mu\text{g}/\text{dl}$) in comparison with control (2.200 ± 0.15 $\mu\text{g}/\text{dl}$); however, this reduction was corrected by the