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SUMMARY AND CONCLUSIONS

The present study was carried out in the Hormone Laboratory at the Department of Environmental Studies, Institute of Graduate Studies and Research, Alexandria University. The aim of this study was to determine the effect of drinking natural saline well water on productive and reproductive performance of male rabbits. The results can be summarized as follow:

- 1- The natural saline well water (800, 3004 and 5284 ppm TDS) used in the present experiment as the source of drinking water had no adverse effect on the productive performance of the rabbits and there is no mortality was found during the experimental period.
- 2- Drinking natural saline well water caused slight or no effect on body weight and dry matter, water and protein intakes. Also, rabbits offered saline well water gained slightly more weight, feed conversion ratio, digestibility of dry matter (DM), organic matter (OM), crude protein (CP), ether extract (EE), nitrogen free extract (NFE) and nutritive values (TDN and DCP) than rabbits consumed tap water. In addition slaughter performance and relative organ weights did not significantly affected.
- 3- Drinking saline well water had no effect on rectal temperature (RT) or respiration rate (RR) compared with control bucks.
- 4- There are no effects on the activity of plasma aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH) and acid phosphatase (AcP). While, plasma total protein (TP) and globulin (G) increased in animals drank saline well water, but albumin has not been changed. On the

other hand, plasma total lipids (TL), cholesterol, creatinine, urea and the activity of alkaline phosphatase (ALP) were significantly lower than in controls.

- 5- Data showed that significant increase of plasma Na, K and Zn were found in treated animals than control. Moreover, significant difference ($p < 0.01$) due to treatment was found on Na^+/K^+ ratio. However, no significant treatment effect was found on Fe, Cu or Se levels. Similarly, no significant differences ($p < 0.01$) due to treatment were found in Na, K, Mg, Ca, P, Zn or Cu and therefore in Na^+/K^+ ratio within body tissues. On the other hand, Fe concentrations decreased as TDS level increased, while Se levels increased ($p < 0.05$) with the increase of TDS.
- 6- Plasma aldosterone increased significantly ($p < 0.05$) with the highest two levels of TDS than in control. Whereas, the lowest level of TDS maintained similar level of aldosterone as that of controls.
- 7- Drinking natural saline well water caused a significant ($p < 0.05$) increase in plasma testosterone level compared with that in control animals.
- 8- The high level of TDS in saline water caused significant ($P < 0.05$) increase in semen ejaculate volume (EV), total sperm output (TSO), sperm motility (%), sperm motility grade, sperm motility index (SMI) total motile sperm per ejaculate (TMS) and semen initial fructose compared with these in control bucks. While, low and medium levels of saline well water caused insignificant increase in these parameters. On the other hand, there were no significant changes in sperm concentration.
- 9- Drinking natural saline well water caused a reduction in reaction time (libido, RT), and percentage of abnormal and dead sperm compared to control animals.

Animals offered the high level of natural saline well water showed the lowest values of these parameters.

- 10- Semen initial pH values were not significantly affected by drinking saline well water.
- 11- Drinking natural saline well water did not cause changes in the activities of seminal plasma AST and ALT compared with these in control animals.
- 12- However, well water significantly decreased the activity of seminal plasma LDH compared with control animals.
- 13- Litter size, no of viable kids at birth and weaning, weight at weaning per kid and conception rate of doe rabbits mated with bucks given saline well water were not affected by treatment.

Therefore, It is concluded that natural saline well water containing 800, 3004 or 5284 ppm TDS with sanitary conditions made slight or no changes in growth performance, physiological and biochemical parameters, and mineral levels of plasma and body tissues of rabbits. As a consequence, there were no harmful effects on animal growth and productivity, rather the treatment enhanced some physiological parameters of the NZW rabbits. Accordingly, raising rabbits under desert conditions with saline well water as the sole source of drinkable water is recommended.