University of Thi-Qar Journal of agricultural research

Thi-Qar Journal of agricultural research

ISSN Onlin:2708 -9347, ISSN Print: 2708 -9339 Volume 15, Issue 1 (2026)

https://iasj.rdd.edu.iq/journals/journal/issue/20226 https://doi.org/10.54174/utjagr.v13ii_5.

Effect of Salt Water on Animal Health

*** Zainab Abdul Hussein Saud. Rana Hashim Adnan* Sama Saeed Ghazi***

***Department Of Veterinary Public Health, College Of Veterinary Medicine, University Of Basrah, Iraq**

Corresponding Author: Zainab Abdulhussein Saud

I. Abstract

Reduced feed intake, poor body condition, and decreased milk production are caused by high salinity in drinking water.

We also talked about how saline water affects fish, especially how ammonia buildup can be harmful, hurt gills, and kill fish. If livestock and poultry can't get to fresh water, too much salt in their drinking water or feed can make them sick. Researchers Figured Out How Salt Can Be Toxic. It can change the balance of sodium, dry out nerve cells, and cause cerebral edema if the person is rehydrated too quickly. The Effects Of Saline Water On Carcass Characteristics Were Also Looked At. These included lower slaughter weight and organ weights, as well as changes in tissues that were not normal. It Was Explained That Salt Toxicity Mostly Affects The Gastrointestinal And Nervous Systems. The Article Stresses How Important It Is To Give Animals Clean, low-salinity water to keep them healthy and boost productivity, and water is essential for all living organisms and is crucial for maintaining the body's normal biological processes. Because of this, the water we drink needs to be clean and good for both people and animals. This article talked about how people are getting more and more worried about how salty water is and how it hurts animals. We looked at how much water different animals normally drink and what levels of salt are safe in drinking water. The effects of saline water on feed intake were highlighted, showing that poor water quality lowers water consumption, which leads to avoiding big financial losses.

II. Introduction

For both humans and animals, fresh water is a vital nutrient. Concerns About Water Quality And Quantity Are Becoming More Widespread, Making It More Difficult For People And Animals To Access Clean, Fresh Water. In addition to growth, reproduction, Lactation, digestion, Metabolism, Excretion, Hydrolysis Of Nutrients, Transport Of Nutrients And Waste, Joint Lubrication, And Many Other Processes, Water All Living Things Require Water. Over 90% Of The Body Mass Of Newborn Animals And Half To Two-Thirds Of The Body Mass Of Adult Animals Is Composed Of Water. A vital component of nearly every bodily secretion is water. Water functions as a universal solvent in the body, supporting cellular biochemical reactions as well as nutrient transport, digestion, absorption, and assembly. A water-based medium aids in the excretion of waste products from the animal body, such as urine, feces, sweat, and perspiration, as well as various digestive juices and food components that interact to promote digestion (Cherian, 2019), and is essential for regulating body temperature (Suttle, 2010).

Scientists And The General Public Have Paid Little Attention To The Risk To The Water Supply For These Uses Modeled By Salt Contamination Through Tidal Rivers, Despite The Fact That Elevated Salt Levels In Drinking Water And Agricultural Irrigation Are Extremely Harmful To Human Health, Animals, And The Environment, And Corrosion Accelerated By Salt Is A Major Problem In Industry. (Gonfa and Musie, 2023). Accelerated By Salt, A Significant Issue In The Industrial Sector. (Musie and Gonfa, 2023). (Gidi Smolders *et al., 2013)*

University of Thi-Qar Journal of agricultural research

Thi-Qar Journal of agricultural research

ISSN Onlin:2708 -9347, ISSN Print: 2708 -9339 Volume 15, Issue 1 (2026)

https://iasj.rdd.edu.iq/journals/journal/issue/20226 https://doi.org/10.54174/utjagr.v13ii_5.

The typical range of water consumption for adult animals is provided below.

Livestock Type	Water Consumption In Litres/Day
Camels	Every 5-8 Days As Much As They Can Drink (Up To 100 Liter Or One Third Of Body Weight) Daily About 15-30 Litres
Beef Cattle	35-60 Per Head
Dairy Cattle	30-80 Per Head
Horses	24-36 Per Head
Donkeys/Mules	Twice A Day As Much As They Can Drink (10-25)
Pigs	15-25 Per Head
Sheep And Goats	5-20 Per Head
Chickens:	40-50 Per 100 Birds = 0.5 Litre Per Bird
Turkeys	40-75 Per 100 Birds = 0.75 Litre Per Bird
Rabbit	50-150 Milliliters (= 0.1 Litre) Water Per Kilogram Bodyweight (Small Cup)

Effect Of Saline Water On Feed Intake

An Animal Can Get Salt Toxicosis If It Eats Too Much Sodium Chloride, Especially If It Doesn't Drink A Lot Of Water. Clinical Indicators Vary Among Species And Between Acute And Chronic Exposures, potentially including ,sadness Weakness, Ataxia, Muscle Tremors, Gastroenteritis, .and seizure-like activity The plan for treatment is to check the patient's hydration and electrolyte levels and then slowly bring the animal's water and electrolyte levels .back to normal over the course of a few days Animals ,may not drink as much as they need to or they may stop ,drinking altogether .because the water is dirty Animals That Don't Drink Enough Water Will Eat Less, Which Will Make Their Body Condition Score Go Down. If they are nursing, their milk supply will also go down (Al-Shujairi, S.O.H. 2013; Salman, A.A. *et al.,* 2017). Sodium Chloride Poisoning Can Happen When You Eat Too Much Sodium Chloride (Direct Salt Poisoning) or Not Enough Fresh Water (Indirect Salt Poisoning). However, it is usually a combination of these two things (Assad, F. *et al.,* 2002, Gupta, R.D. (Ed.); Kahn, C.M. (Ed.).

Effect of Saltwater on Fish and Livestock

If an animal eats too much sodium chloride, it can get salt toxicosis, especially if it doesn't drink enough water. Different species and different lengths of exposure show different clinical signs. Some of these symptoms are feeling sad and weak, having trouble walking, muscle tremors, gastroenteritis, and seizures. The plan for treatment is to check the patient's hydration and electrolyte levels and then slowly bring them back to normal over the next few days. Animals may not drink enough water if it is dirty, or they may stop drinking altogether. Animals That Don't Drink Enough Water Won't Eat As Much, Which Will Make Their Body Condition Score Go Down. If they are nursing, their milk supply will also go down (Al-Shujairi, S.O.H. 2013; Salman, A.A. *et al.,* 2017). If you eat too much salt (direct salt poisoning) or don't drink enough fresh water (indirect salt poisoning), .you could get sick But most of the time, it's a mix of these two things (Assad, F. *et al.,* 2002; Gupta, R.D. (Ed.); Kahn, C.M. (Ed.). The Year 2010. Sheep Can Drink Water With About 1% Salt In It. It could be bad if the concentration is around 1.5%. Most experts say that drinking water for all kinds of animals should have less than 0.5% total salt (Thompson, 2018).

Sheep can drink water with 1% salt in it, but water with 1.5% salt in it could be bad for them. It is usually best for drinking water for all kinds of animals to have less than 0.5% total salt.

University of Thi-Qar Journal of agricultural research

Thi-Qar Journal of agricultural research

ISSN Onlin:2708 -9347, ISSN Print: 2708 -9339 Volume 15, Issue 1 (2026)

https://iasj.rdd.edu.iq/journals/journal/issue/20226 https://doi.org/10.54174/utjagr.v13ii_5.

Mechanism of Action

Instead of serum sodium levels going up, water moves from the interstitial and intracellular fluids to the extracellular fluid along the osmotic gradient. Rapid onset of hypernatremia leads to cerebral dehydration and neuronal cell atrophy, causing the brain to retract from the calvarium, which interrupts cerebral blood flow and may result in vessel rupture and hemorrhage. To prevent excessive water loss to the extracellular fluid, brain cells elevate their intracellular osmolarity by producing abiogenic osmoles. Sodium passively diffuses across the blood-brain barrier and eventually reenters neural tissues; however, elevated intracellular sodium concentrations impede energy-dependent pathways for sodium export. Changes in cellular osmolarity during long-term water deprivation can cause serum sodium levels to drop quickly when water is available again. This can cause water to flow into neurons along the osmotic gradient, which can cause cerebral edema. (Thompson., 2018)

The Impact of Saline Water on Carcass Traits.

Numerous studies indicate that carcasses exposed to salt water exhibit a substantial reduction in slaughter weight, carcass weight, hindlimb weight, liver, and kidney weight, whereas the forelimb remains unaffected (Pearce *et al.,* 2008). Al-Owaimer *et al. (2008)* demonstrate a reduction in fat and addressing percentage; however, they did not influence fat thickness and bone ratio. The carcasses exhibited macroscopic signs of congestion and mild edema in the brain tissues, alongside pronounced congestion and thickening, accompanied by petechial hemorrhages in the rumen intestine, which contained dark fluid feces. Furthermore, the histopathological analyses indicated spongiform ,encephalopathy characterized by markedly congested blood vessels alongside the identification of a neurovascular thrombus (K. M. Al-Saad, 2021).

Salt Toxicity Symptom

1- Gastrointestinal Tract And Central Nervous System, which can cause abdominal pain and diarrhea, then circling, blindness, partial paralysis, and death.
2- Animals Can Also Act Aggressively.
3- If you think your dog has salt toxicity, call your vet right away. The signs of salt toxicity are similar to those of polioencephalomalacia (polio), which can cause sulfate toxicity and nervous disorders. (Robin Salverson., 2010)

Treatment

The severity of the illness will determine the treatment plan. If there are signs of St., if St. is in its last stages, letting the animal drink as much as it wants could kill it. To Avoid GI Tract Problems And Brain Lesions, Water Needs To Be Rationed. If you notice any signs of ST, get in touch with a vet right away. Water limits mean that the animal needs to drink 0.5% of its body weight in water every day until the symptoms go away, which can take a few days. In extreme situations, the best way to give water may be through the throat (Drinking Post., 2026).

ISSN Onlin:2708 -9347, ISSN Print: 2708 -9339 Volume 15, Issue 1 (2026)

https://iasj.rdd.edu.iq/journals/journal/issue/20226 *https://doi.org/10.54174/utjagr.v13ii 5.*

III. Reference

Al-Saad, K. M., Alfaris, A. A., & Muhsen, R. K. (2021). Sodium chloride poisoning in Iraqi water buffalo (Bubalus bubalis) of Basrah Governorate, Iraq. Iraqi Journal of Agricultural Sciences, 52(3), 564–574.

Suttle, N. F. (2010). Sodium and chloride. In Mineral nutrition of livestock (4th ed., pp. 182–205). Wallingford, UK: CABI Publishing.

Musie, W., & Gonfa, G. (2023). Freshwater resource scarcity, water salinity challenges, and possible remedies: A review. Heliyon, 9(8), e18685. https://doi.org/10.1016/j.heliyon.2023.e18685

Thompson, L. J. (2018). Sodium chloride (salt). In R. C. Gupta (Ed.), Veterinary toxicology (3rd ed., pp. 461–464). Academic Press.

Al-Shujairi, S. O. H. (2013). Develop and apply a water quality index to evaluate the water quality of the Tigris and Euphrates Rivers in Iraq. International Journal of Modern Engineering Research, 3(4), 2119–2126.

Salman, A. A., & Al-Joubory, H. H. R. (2017). Effect of using irrigation water of different qualities and bio-fertilizer on some chemical properties of calcareous soil. Iraqi Journal of Agricultural Sciences, 48(1), 185–191.

Assad, F., & El-Sherif, M. M. A. (2002). Effect of drinking saline water and feed shortage on adaptive responses of sheep and camels. Small Ruminant Research, 45, 279–290.

Gupta, R. C. (Ed.). (2012). Veterinary toxicology (2nd ed.). Academic Press.

Kahn, C. M. (Ed.). (2010). The Merck veterinary manual (10th ed., pp. 2624–2626). Merck & Co., Inc.

Hinchcliffe, D., & Furlong, S. (2018). Water quality. In BSAVA manual of ornamental fish (3rd ed.). BSAVA.

Pearce, K., Pethick, D., & Masters, D. (2008). The effect of ingesting a saltbush and barley ration on the carcass and eating quality of sheep meat. Animal, 2(3), 479–490. https://doi.org/10.1017/S1751731107001449

Salverson, R., & Daly, R. (2024, August 9). Salt toxicity: Water deprivation. SDSU Extension.

Suttle, N. F. (2010). Sodium and chloride. In Mineral nutrition of livestock (4th ed., pp. 182–205). Wallingford, UK: CABI Publishing.

Salverson, R., & Daly, R. (2024, August 9). Salt toxicity: Water deprivation. SDSU Extension.

Naji, H. A., Al-Husseiny, S. H., Saud, Z. A. H., & Saleh, W. M. M. (2024). Schmallenberg virus investigation among dairy cattle in Iraq. Advances in Animal and Veterinary Sciences, 12(11), 2093.

(Note: add page range or article ID if required by the journal.)

Drinking Post. (2026). Water quality and cattle weight gain. Next, livestock watering systems.