

## Vitamin and Mineral Focus: Sodium

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Sodium is the primary extracellular cation that is required for many basic physiologic processes such as heart and nervous system function, as well as many metabolic processes. If you think back to your high school biology class you probably learnt about the role of sodium in the sodium-potassium pump, which is required to transport nutrients like glucose, amino acids, and chloride across cell membranes. The same process happens in dairy cows, and there is a similar requirement for sodium to carry out this essential process. Sodium absorption occurs in the digestive tract and a majority of the sodium that cows consume from their diet is in an available form meaning that the body can readily use it; however, very little sodium is actually stored in the body so it is beneficial not to provide it in excess. Frequent supplementation at low levels is the best approach to maximize use of sodium in dairy cow diets. When considering sodium requirements, it is important to consider all the ways that sodium is lost (milk, urine, feces, sweat, and saliva). Sodium levels in the fresh cow diet should be in the range of 0.3-0.6%, and 0.25-0.30% of the remainder of the lactation (on a DM basis). These levels should increase to 0.5% when cows are experiencing heat stress as they will sweat more and consequently lose more sodium. If you suspect sodium deficiency in your herd, look for clues such as decreased appetite and decreased water intake, increased frequency of cows licking other cows' urine, and a decrease in milk yield. Dry cows have a requirement for sodium that is slightly more complex than the lactating cow, given its involvement in DCAD. Sodium levels in the dry cow diet should not exceed 0.2% on a DM basis, and increasing sodium levels beyond this could influence the overall DCAD balance and result in metabolic issues after calving. Furthermore, sodium plays a role in water retention so if you notice frequent occurrences of edema in your transition cows, you could consider reducing sodium levels for close-up dry cows. A majority of farms have sodium added to their mineral blend (in the form of sodium chloride), however some farms offer free choice salt blocks and that strategy works also. If salt blocks are the sole source of sodium, just be cautious that all cows are receiving the required level.