

Iodine Supplementation Issue *Review and Solution*

With the development of a highly successful market in the infant milk formula arena an issue has now arose of a detrimentally high Iodine level in our milk supply. It is important to understand how this has come about and what is best scientifically proven option to remedy the situation.

Here in Ireland over the last 20 years we have supplemented extremely high levels of Iodine in our efforts to generate adequate levels for absorption. The strategy is to over supply large quantities of the element to evade losses due to interactions and guarantee that sufficient Iodine is delivered for absorption. We adopt the same approach with Copper, Zinc, Manganese etc. It is common to see levels of 60 – 100mg supplemented Iodine per animal per day which is many folds higher than the standard 10-15mg supplemented elsewhere in Europe and across the world. This excessively high level of Iodine supplementation, unique to Ireland, is now however having negative consequences as the excess element is being transferred to the milk making it unsuitable for the manufacture of infant formula.

Research now shows this approach of feeding such high levels of supplemental Iodine is totally unnecessary for the health of the cow as Iodine, unlike copper and zinc for example, is not a positively charged transitional element and is not prone to antagonistic interaction with other elements and is readily delivered across the intestinal wall for absorption, as we now see. The animal stores its required Iodine in the thyroid glands in its inactive form of T4. When the element is required by the animal at calving and rebreeding periods this stored T4 form must be converted into the active T3 form. This conversion is controlled by the enzyme Deiodinase a selenium dependant enzyme. Numerous studies show our Irish grasslands main deficiency is of selenium and therefore what we have is not an Iodine deficiency issue for the cow but rather a T3 active form of Iodine deficiency, caused by our core deficiency of selenium.

Remedy:

These high Iodine supplemental levels which are causing such problems particularly in the infant formula situation need to be reduced back, to the more acceptable international standards of approximately 10 to 15mg per animal per day. To achieve this, we need to ensure the needs of the cow are also met and that sufficient quantities of the inactive T4 form are being converted to the active T3 form when required. To do this we should address the fundamental issue of selenium deficiency in our feeding strategies.

One proposed solution to this Iodine supplementation had been to attempt to produce an organic chelated version or Bioplex form of Iodine for use at lower levels but two issues occur. Firstly, Iodine chemically, does not carry an electrical charge unlike the transition elements of Copper, Zinc etc and this renders it incapable of forming an organic chelate. Secondly, and more importantly, the absence of this electrical charge ensures that Iodine has no great difficulty being absorbed as it is not prone to any interaction and therefore negates the requirement to produce an organic chelate, Bioplex form in the first place.

Instead the solution to this issue is not to concentrate on the levels of Iodine but rather address the basic and more fundamental issue of our selenium deficiency in terms of adequate supplementation. Selenium supplementation levels already at the maximum level allowed by the European Union have proved ineffective particularly when fed in the inorganic sodium selenite form. Therefore, the best option is to concentrate on the more organic route, with higher availability and absorption, in the form of **Sel-Plex** thereby ensuring sufficient Deiodinase enzyme is available to convert the adequate supply of inactive stored T4 Iodine to the required T3 active Iodine.

Summary:

The only way to remedy the situation of supplying adequate Iodine for the cows to match the cow's requirements but not excessive amounts causing the difficulties with the infant formula is to reduce the supplemented Iodine levels to the internationally accepted lower level of 10-15mg per day and ensure that we have an adequate level of organic selenium **Sel-Plex** provided to ensure the adequate transfer of the inactive T4 form of Iodine to the active T3 as has been reported in numerous published studies. Numerous studies have been published showing the significant improvements in cow fertility and significant decrease in calving difficulties when this organic selenium technology **Sel-Plex** approach is taken.