Thiocyanate is known to block iodine uptake by the thyroid gland. In the cellular membrane of the cells from thyroid follicles, the protein responsible for iodide capture from the bloodstream was identified as Na\(^+\)I\(^-\) symporter (NIS). The sodium-iodide Symporter is present in the thyroid gland and also in the mammary glands. Thiocyanate has greater affinity than iodide for the symporter sites. Thus, thiocyanate (SCN\(^-\)) interferes with iodide uptake into the thyroid gland. Because iodide is an essential component of thyroid hormones, thiocyanate disrupts the thyroid functions. In adults, the thyroid helps to regulate metabolism. In children, the thyroid plays a major role in proper development in addition to metabolism. To a newborn, the development of the thyroid gland is crucial because the circulating thyroid hormones are involved in neural development. Impairment of thyroid function in expectant mothers may impact the fetus and newborn and result in effects including changes in behaviour, delayed development and decreased learning capability.

The goitrogenic potential of thiocyanate (SCN\(^-\)) has been studied for years. The SCN\(^-\) effects have been found to depend on the SCN\(^-\) concentration and the ratio of I\(^-\)/SCN\(^-\). Smoking, via cyanide detoxification, increases the SCN\(^-\) load.

Milk is the most nutritionally complete food containing nearly all the constituents of nutritional importance to humans. Milk is an important dietary ingredient for expecting and lactating mothers. In particular it is essential for the development of strong healthy teeth and bones in young children. Therefore, it is very important to determine thiocyanate and iodine levels in milk samples.

In this work, simultaneous determination of thiocyanate and iodine in milk samples was achieved by ion chromatography with suppressed conductivity detection. All chromatography was performed on a Dionex ICS-3000 ion chromatography system. The separation of thiocyanate and iodine on a polymer anion-exchange column (Dionex IonPac AS20, 4.0x250mm with a guard column AG20, 4.0x50mm) was obtained by eluting them with 60mM sodium hydroxide at 0.25mL.min\(^{-1}\).