



SOCIETAS PHYSIOLOGICAE HOLMIENSIS

FYSIOLOGFÖRENINGEN

**Monday February 26, 2018
at 16:00**

Hillarp lecture hall,
Retzius v. 8, Karolinska Institutet, Solna

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Nitrate and Nitrite in Health and Disease

The source of dietary nitrate (NO_3) is mainly green, leafy vegetables, partially absorbed into blood through intestinal mucosa. The recycled nitrate is reabsorbed and concentrated by the salivary glands and then secreted into saliva. In 2012, sialin was first discovered as the mammalian membrane nitrate transporter in salivary glands and shown to play a key role in circulation of inorganic nitrate, providing a scientific basis for further investigation into the circulation and functions of nitrate. Dietary nitrate can be converted to nitrite (NO_2) by oral commensal bacteria under the tongue or in the stomach, followed by conversion of nitrate to nitric oxide (NO) through non-enzymatic synthesis. Previously, nitrate and nitrite were thought to be carcinogenic due to the potential formation of nitrogen compounds, whereas the beneficial functions of the NO_3 -- NO_2 -- NO pathway were ignored. Under conditions of hypoxia and ischemia, the production of endogenous NO from L-arginine is inhibited, while the activity of exogenous NO_3 -- NO_2 -- NO is enhanced. Recently, increasing evidence has shown that nitrate and nitrite serve as a reservoir and exert positive biological NO -like functions. Therefore, exogenous dietary nitrate plays an important role in various physiological activities, prevention and therapy of diseases such as senescence-related decline in liver function, osteoporosis and radiation damage.

Host: Tomas Hökfelt