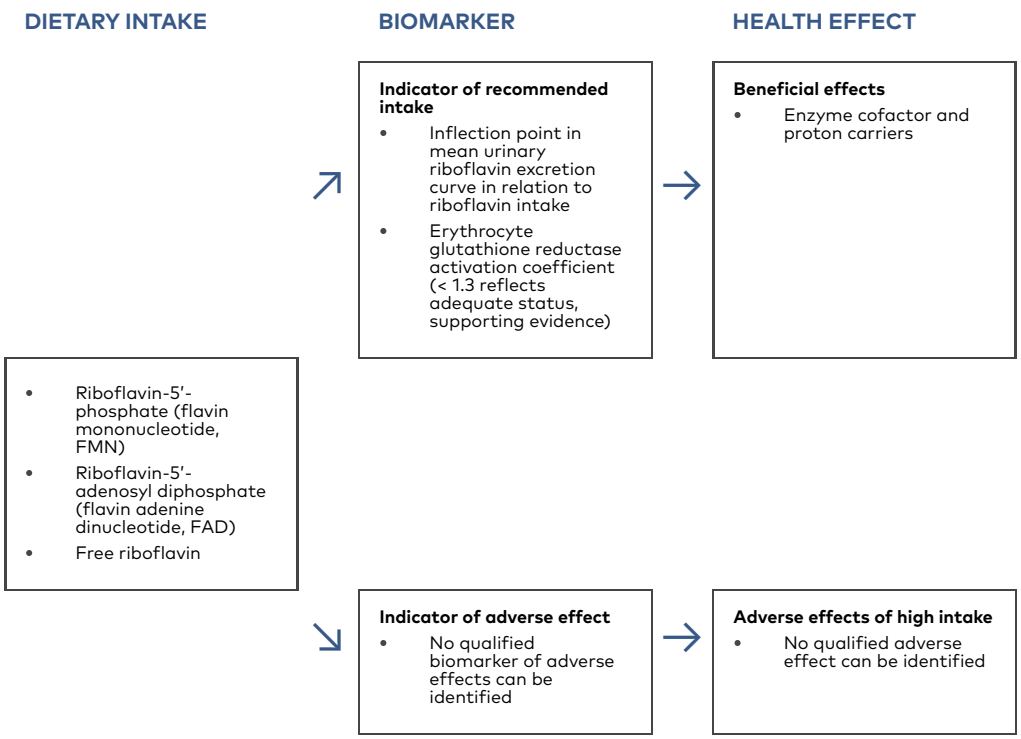
Riboflavin (vitamin B_2)



	Females	Males
AR (mg/d)	1.3	1.3
RI (mg/d)	1.6	1.6

For more information about the health effects, please refer to the background paper by Vegard Lysne and Hanna Sara Strandler (Lysne & Strandler, 2023).

Dietary sources and intake. Riboflavin (vitamin B2) is a water-soluble compound present in foods as riboflavin-5′-phosphate (flavin mononucleotide, FMN), riboflavin-5′-adenosyl diphosphate (flavin adenine dinucleotide, FAD) and free riboflavin (EFSA, 2017a; IOM, 1998b; Lysne & Strandler, 2023). Main sources in Nordic and Baltic diets are dairy and meat products. Non-animal sources include legumes, almonds, green vegetables and mushrooms, whilst grain products are relatively poor sources unless they are enriched or fortified. The average riboflavin intake ranges from 1 to 2.1 mg/d (Lemming & Pitsi, 2022).

Main functions. FAD and FMN act as cofactors of several flavoprotein enzymes, e.g., glutathione reductase and pyridoxamine phosphate oxidase, and as proton carriers in redox reactions involved in energy metabolism. Flavoproteins are involved in e.g., tricarboxylic acid cycle, fatty acid β-oxidation, amino acid catabolism, electron transport chain, DNA repair/gene expression and cell signalling (EFSA, 2017a; IOM, 1998b; Lysne & Strandler, 2023).

Indicator for recommended intake. The inflection point in mean urinary riboflavin excretion curve in relation to riboflavin intake reflects body saturation and is used as indicator for setting AR (EFSA, 2017a; IOM, 1998b; Lysne & Strandler, 2023).

Main data gaps. Physical activity modifies riboflavin status, but there is a lack of data on a quantitative relationship between riboflavin status biomarkers and energy expenditure. The role of MTHFR C677T polymorphism, which modifies the riboflavin requirement, needs to be determined (Lysne & Strandler, 2023).

Deficiency and risk groups. Clinical signs of deficiency are unspecified and include stomatitis, seborrheic dermatitis, glossitis, cheilosis, sore throat, hyperaemia and oedema of pharyngeal and oral mucous membranes, and normochromic normocytic anaemia. Risk groups for riboflavin deficiency include older adults, haemodialysis patients, people with alcohol use disorder, users of diuretics and people with severe malabsorption (EFSA, 2017a; IOM, 1998b; Lysne & Strandler, 2023). People with prolonged restriction of animal products in their diets, such as vegans, are at risk of riboflavin inadequacy unless consuming supplements or fortified foods.

Dietary reference values. The weighted mean of riboflavin intake associated with the inflection point in the mean urinary excretion curve in relation to riboflavin intake was used to identify AR. Assuming that the frequency distribution is normally distributed, AR in adults is set to 1.3 mg/d (females and males). RI: 1.6 mg/day (females and males). Not sufficient data to derive UL (Lysne & Strandler, 2023).