

# Evidence-based Vitamin K Usage

**Name(s):** Phylloquinone, phytonadione, menaquinone and menadione.

**Description:** This vitamin was discovered by the Germans. Vitamin K plays a major role in blood coagulation. In Germany, coagulation is spelled with a 'K', this is why it is called vitamin K. The human body is the residence of what is called the normal flora (bacteria). The microorganisms in the lower intestinal tract produce vitamin K. Babies are born with a sterile intestinal tract so they must be supplemented with vitamin K. This vitamin is sensitive to light.<sup>1</sup>

**Absorption/Storage:** Absorbed in the upper intestinal tract, vitamin K is transported to the liver by bile salts or bile. This vitamin is stored in small quantities. Vitamin K is destroyed by rancid fats, radiation, aspirin, and air pollution. Absorption is interfered with by any obstruction of the bile ducts limiting the secretion of fat-emulsifying bile salts.<sup>1</sup>

## **Recommended Dietary Allowance/Dietary Reference Intake:**<sup>2</sup>

| Persons                      | U.S.   |
|------------------------------|--------|
|                              | mcg    |
| Birth to 3 years of age      | 2-30   |
| 4 to 8 years of age          | 55     |
| 9 to 13 years of age         | 60     |
| Adolescent and adult males   | 75-120 |
| Adolescent and adult females | 75-90  |
| Pregnant females             | 75-90  |
| Breast-feeding females       | 75-90  |

**Optimum Daily Allowance (Adult):** 100-500 mcg.<sup>3</sup>

**Tolerable Upper Intake Level:** None available.

**Principal Uses:** Osteoporosis.<sup>4-21</sup>

**Proposed Uses:** Celiac disease (for deficiency only) and cystic fibrosis.<sup>22</sup>

**Traditional Uses:** Acute myeloid leukemia (vitamin K2 only), nausea of morning sickness, myelodysplastic syndromes (vitamin K2 only) and phenylketonuria (if deficient).<sup>22</sup>

## **Healthy Sources:**

High (40%+ US RDA): Raw asparagus, raw or frozen

broccoli, raw cabbage, raw cauliflower, dry garbanzo beans, dry lentils, dry mung beans, raw nettle leaves, seaweed, raw or frozen spinach, raw soybeans, raw green tomatoes, raw turnip greens and whole wheat flour.<sup>23</sup>

Medium (25-39% US RDA): Frozen green beans, iceberg lettuce, dry peas, raw strawberries and raw red tomatoes.<sup>23</sup>

**Contraindications:** In deciding to use a medicine, the risks of taking the medicine must be weighed against the good it will do. This is a decision you and your doctor will make. For vitamin K, the following should be considered:

**Allergies--**Tell your doctor if you have ever had any unusual or allergic reaction to vitamin K. Also tell your health care professional if you are allergic to any other substances, such as foods, preservatives, or dyes.

**Pregnancy--**Vitamin K has not been reported to cause birth defects or other problems in humans. However, the use of vitamin K supplements during pregnancy is not recommended because it has been reported to cause jaundice and other problems in the baby.

**Breast-feeding--**Vitamin K taken by the mother has not been reported to cause problems in nursing babies. You should check with your doctor if you are giving your baby an unfortified formula. In that case, the baby must get the vitamins needed some other way.

**Children--**Children may be especially sensitive to the effects of vitamin K, especially menadiol or high doses of phytonadione. This may increase the chance of side effects during treatment. Newborns, especially premature babies, may be more sensitive to these effects than older children.

**Older adults--**Many medicines have not been tested in older people. Therefore, it may not be known whether they work exactly the same way they do in younger adults or if they cause different side effects or problems in older people. There is no specific information about the use of vitamin K in the elderly.

**Other medical problems--**The presence of other medical problems may affect the use of vitamin K. Make sure you tell your doctor if you have any other medical problems, especially:

- Cystic fibrosis or other diseases affecting the pancreas

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or

- Diarrhoea (prolonged) or
- Gallbladder disease or
- Intestinal problems--These conditions may interfere with absorption of vitamin K into the body when it is taken by mouth; higher doses may be needed, or the medicine may have to be injected
- Glucose-6-phosphate dehydrogenase (G6PD) deficiency--The chance of side effects may be increased, especially with menadiol
- Liver disease--The chance of unwanted effects may be increased.<sup>24</sup>

## Interactions:

|                                 |   |
|---------------------------------|---|
| Decreases Vitamin Availability: | Corticosteroids, mineral oil, <sup>22</sup> antibiotics, anticonvulsants, bile acid sequestrants, <sup>22,25</sup> anticoagulants, calcium (high dose), charcoal, fibre supplementation, laxatives, sucralfate, vitamin E (large doses), <sup>25</sup> and high dose salicylates. <sup>26</sup> |
| Increases Vitamin Availability: | Oestrogens and oral contraceptives. <sup>25</sup>   |
| Adverse Reactions:              | Warfarin. <sup>22</sup>   |

**Deficiency:** A deficiency in vitamin K may cause a number of blood clotting disorders. Prothrombinaemia is a condition causing blood-clotting time to be prolonged. A deficiency may cause haemorrhaging in the brain, spinal cord and intestinal tract. Other symptoms of a deficiency include bruising and black and blue marks on the skin.<sup>1</sup>

**Toxicity/Side Effects:** Along with its needed effects, a medicine may cause some unwanted effects. Although not all of these side effects may occur, if they do occur they may need medical attention.

Check with your doctor as soon as possible if any of the following side effects occur:

*Less common--With meadow or high doses of phytonadione in newborns*

- Decreased appetite; decreased movement or activity; difficulty in breathing; enlarged liver; general body swelling; irritability; muscle stiffness; paleness; yellow eyes or skin

*Rare--With injection only*

- Difficulty in swallowing; fast or irregular breathing; light-headedness or fainting; shortness of breath; skin rash, hives and/or itching; swelling of eyelids, face, or lips; tightness in chest; troubled breathing and/or wheezing

*Rare*

- Blue colour or flushing or redness of skin; dizziness; fast and/or weak heartbeat; increased sweating; low blood pressure (temporary)

Other side effects may occur that usually do not need medical attention. These side effects may go away during treatment as your body adjusts to the medicine. However, check with your doctor if any of the following side effects continue or are bothersome:

*Less common*

- Flushing of face; redness, pain, or swelling at place of injection; skin lesions at place of injection (rare); unusual taste

Other side effects not listed above may also occur in some patients. If you notice any other effects, check with your doctor.<sup>24</sup>

**Treatment for Overdose:** None.

**Storage:** To store this medicine:

- Keep out of the reach of children.
- Store away from heat and direct light.
- Do not store in the bathroom, near the kitchen sink, or in other damp places. Heat or moisture may cause the medicine to break down.
- Do not keep outdated medicine or medicine no longer needed. Be sure that any discarded medicine is out of the reach of children.<sup>24</sup>

## References:

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