



Beta Carotene	
Description	Beta Carotene is a precursor form of vitamin A which means that it is converted to vitamin A in the body on an 'as-required' basis.
Function	Beta-carotene acts as an antioxidant in the body, neutralising potentially damaging free radicals.
Human Requirements	EU RDA: Not established.
Dietary Intake	In the UK, the average adult diet provides 2.28 mg (beta-carotene) daily ¹ . Five portions of fruit and vegetables per day will usually provide about 6mg of beta-carotene. However, apples, bananas and onions provide almost no beta-carotene.
Food Sources	Fruit and vegetables such as carrots, red pepper, spinach (and other dark green leafy vegetables), mango, peaches and apricots (60 per cent of the average UK intake comes from carrots). Levels are stable during cooking, but losses occur due to exposure to light and air.
Deficiency Symptoms	None known.
Precautions / Contra-Indications	High intakes are not recommended for smokers. Two large scale studies have shown an association between beta-carotene supplementation (20mg/day) and an increased incidence of lung cancer in smokers and individuals with previous high-level exposure to asbestos ^{2,3} . Safe Upper Level: 7mg ⁴
Pregnancy & Breastfeeding	Beta-carotene is converted to vitamin A in the body on an 'as-required' basis. This makes it safe during pregnancy when high levels of vitamin A itself (retinol) should be avoided.
Adverse Effects	Carotenoids are generally non-toxic. Intake of >30mg daily may lead to hypercarotenemia which is characterised by a yellowish colouration of the skin (including soles of feet and palms of hand). This is harmless and reversible.
Interactions	None specifically established
References	<ol style="list-style-type: none"> 1. DEFRA. UK Purchases and expenditure on food and drink and derived energy and nutrient intakes in 2005-06. National Statistics, January 2007. 2. The Alpha-Tocopherol, Beta Carotene Cancer Prevention Study Group. (1994) The effect of vitamin E and beta carotene on the incidence of lung cancer and other cancers in male smokers. <i>New England Journal of Medicine</i> 330, 1029-1035. 3. Omenn, G.S., Goodman, G.E., Thornquist, M.D., Balmes, J., Cullen, M.R., Glass, A., Keogh, J.P., Meyskens, F.L., Valanis, B., Williams, J.H., Barnhart, S., Hammer, S. (1996). Effects of a combination of beta-carotene and vitamin A on lung cancer and cardiovascular disease. <i>New England Journal Medicine</i> 334, 1150-1155 4. Expert Group on Vitamins and Minerals, 2003.