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Chemical Vitamin E Producers (CVEP) responds to EFSA review of vitamin E Dietary Reference Values

The European Food Safety Authority (EFSA) has concluded that the current Recommended Daily Amount (RDA) of vitamin E should be replaced by a newly defined Adequate Intake (AI). CVEP is responding to this by highlighting the most recent scientific studies not broadly recognized yet, as well as emphasizing that more research into the micronutrient is needed to precisely define the vitamin E requirement in humans. In particular, this includes the role of vitamin E in protecting polyunsaturated fatty acids (PUFAs) from being oxidized in cell membranes and the beneficial effect of adequate blood levels of vitamin E on cardiovascular health. The new research suggests that individual requirements vary in view of the critical interactions between vitamin E and PUFAs and differ for specific groups, such as pregnant and lactating women, as well as being dependent on factors such as age.

The CVEP appreciates the work carried out by the EFSA panel in reviewing the Dietary Reference Values (DRV) for vitamin E. It is important to consider all scientific evidence when defining the value. This should include recent research that had been accepted by other well recognized agencies, such as the Institute of Medicine in the US and the D-A-CH report for Germany, Austria and Switzerland.

Achieving an optimal status of vitamin E is associated with a number of positive health benefits. Outcomes from the main epidemiological studies show a risk reduction of 24% for cardiovascular events, when comparing high versus low vitamin E concentrations. These results suggest a beneficial effect of vitamin E at a plasma concentration of 30 $\mu\text{mol/L}$. An increase of the intake recommendation would secure that the general population can reach this status.¹

The recommended daily intake of vitamin E varies according to the age, gender and criteria applied in individual countries. In the European Union, adult recommendations previously ranged from 4 to 25mg α -tocopherol equivalents (α -TE)/day for men and from 3 to 12mg α -TE/day for women. The German-speaking countries (D-A-CH, 2013) have only recently set the recommendation at 12-15mg α -TE/day for men and 11-12 mg α -TE/day for women according to age. Additionally for pregnant and lactating women 13 and 17 mg/day α -TE/day are recommended by D-A-C-H (2013). The results from a number of observational, prospective studies suggest that a serum tocopherol concentration of 30 $\mu\text{mol/L}$ and above has

¹ Ibid.



beneficial effects on human health in the field of cardiovascular disease and some cancers²³⁴⁵⁶. Low intake of vitamin E is also linked to higher rate of miscarriage⁷ as well as asthma and allergies in the offsprings⁸.

Vitamin E is a powerful antioxidant and carries an approved EFSA health claim for 'contributing to the protection of cells from oxidative stress'⁹. Emerging data also suggest that vitamin E in higher doses holds promise beyond these recognized benefits of vitamin E as an essential nutrient. For selected individuals and population groups, vitamin E is understood to reduce the risk of Alzheimer's disease¹⁰ and to limit the negative health implications of fatty liver¹¹ and air pollution¹²¹³.

Assessment of intake of vitamin E is generally low in Europe. For example, the results of a micronutrient intake panel demonstrated that more than 75% of the population in the UK does not meet the recommended intake¹⁴. With individual needs varying depending on factors such as age, it may be more appropriate to consider a range of values rather than a fixed intake requirement.

The Chemical Vitamin E Producer (CVEP) association represents companies producing and marketing vitamin E. CVEP engages and advocates for science on the role of vitamin E in feed, food and personal care applications.

² Gey KF, Puska P, Jordan P, Moser UK. Inverse correlation between plasma vitamin E and mortality from ischemic heart disease in cross-cultural epidemiology. *Am J Clin Nutr.* 1991;53:326s-34s

³ Gey KF. Prospects for the prevention of free radical disease, regarding cancer and cardiovascular disease. *Br Med Bull.* 1993;49:679-99

⁴ Knekt P, Ritz J, Pereira MA, O'Reilly EJ, Augustsson K, Fraser GE, et al. Antioxidant vitamins and coronary heart disease risk: a pooled analysis of 9 cohorts. *Am J Clin Nutr.* 2004;80:1508-20

⁵ Biesalski HK, Bohles H, Esterbauer H, Furst P, Gey F, Hundsdorfer G, et al. Antioxidant vitamins in prevention. *Clin Nutr.* 1997;16:151-5

⁶ Gey KF. Cardiovascular disease and vitamins. Concurrent correction of 'suboptimal' plasma antioxidant levels may, as important part of 'optimal' nutrition, help to prevent early stages of cardiovascular disease and cancer, respectively. *Bibl Nutr Dieta.* 1995:75-91

⁷ Shamim AA, Schulze K, Merrill RD, Kabir A, Christian P, Shaikh S, et al. First-trimester plasma tocopherols are associated with risk of miscarriage in rural Bangladesh. *Am J Clin Nutr.* 2015;101:294-301

⁸ Cook-Mills J.M. Maternal Influences over Offspring Allergic Responses. *Current Allergy and Asthma Reports* 15 (2), 2015.

⁹ <http://www.efsa.europa.eu/en/efsajournal/pub/1816.htm>

¹⁰ M. Dyksen et al, 'Effect of Vitamin E and Memantine on Functional Decline in Alzheimer Disease,' *Journal of the American Medical Association*, Vol 311, No 1 (2014)

¹¹ Sanyal A. J. et al. 'Pioglitazone, vitamin E, or placebo for non-alcoholic steatohepatitis.' *N Engl J Med.* 2010; 362(18):1675-1685

¹² Hueylen Sue et al, 'Effect of Vitamin C and E intake on peak respiratory flow rate of asthmatic children exposed to atmospheric particulate matter,' *Arch Environ Occup H* 2013;68:80

¹³ Zhang, W. et al. Nutrition solutions to counter health impact of air pollution: scientific evidence of marine omega-3 fatty acids and vitamins minimizing some harms of PM2.5. (2015) *J Food Nutr Sci* 2(2): 1-6

¹⁴ Troesch, B., et al., 'Dietary surveys indicate vitamin intakes below recommendations are common in representative Western countries.' *British Journal of Nutrition*, 2012. 108(04): p. 692-698.

