

[S-5]**Transcription factor NF- κ B as a potential biomarker of oxidative stress to evaluate antioxidant effects**

Robin van den Berg, Aafje Sierksma, Henk F.J. Hendriks, Wouter H.J. Vaes
TNO Nutrition and Food Research, P.O. Box 360, 3700 AJ Zeist, Netherlands

There is increasing interest in the involvement of transcription factors, such as of the transcription factor NF- κ B (nuclear factor- κ B), in the pathogenesis of various diseases. The involvement of NF- κ B is especially of interest as it is activated by oxidative stress and its activation can be modulated by antioxidant compounds.

NF- κ B is involved in the control of the transcription of a variety of cellular genes that regulate the inflammatory response by the production of cytokines, chemokines, cell adhesion molecules and acute phase proteins.

The activation of NF- κ B can be determined by the electromobility shift assay (EMSA) or by an ELISA-based assay with NF- κ B binding-site-specific probes. These methods can also be used on human mononuclear cells isolated from peripheral blood, which could make the assay applicable for clinical trials^{1,2,3,4}.

Our hypothesis is that NF- κ B in combination with the classical risk factors for CHD which are (co-)regulated by NF- κ B, such as CRP, ICAM and interleukins, might be a indicative set of biomarkers to evaluate an antioxidant effect in CHD risk. Studies performed to support this hypothesis will be presented.

- 1 Van den Berg R, Haenen GRRM, Van den Berg H, Bast A (2001) Transcription factor NF-B as a potential biomarker for oxidative stress. *British Journal of Nutrition* 86: S121-S127.
- 2 Drent M, Van den Berg R, Haenen GRMM, Van den Berg H, Wouters EFM, Bast A

- (2001) NF-B activation in sarcoidosis. *Sarcoidosis Vasculitis and Diffuse Lung disease*. 18: 50-56.
- 3 Van den Berg R, Haenen GRRM, Van den Berg H, Bast A (2001) Nuclear factor-B activation is higher in peripheral blood mononuclear cells of male Smokers. *Environmental Toxicology and Pharmacology* 9: 147-151.
 - 4 Van den Berg, van Vliet T, Broekmans WMR, Cnubben NHP, Vaes WHJ, Haenen GRRM, Bast A, Roza L, Van den Berg H (2001) A vegetable/fruit concentrate with a high antioxidant capacity has no effect of on biomarkers of antioxidant status in smokers. *Journal of Nutrition* 131: 1714-1722.