

3rd Immunonutrition Workshop, 21–24 October 2009, Girona, Spain

Multivitamin supplementation reduces sick building syndrome in employees in Jakarta, Indonesia

B. Haryanto¹ and H. Purnama²

¹*Department of Environmental Health, IAKMI (Indonesian Public Health Institution) & FKM-UI (Public Health Faculty-University of Indonesia), Jakarta, Indonesia* and ²*Bayer Consumer Care Ltd, Jakarta, Indonesia*

Environmental pollution has become a serious problem in many big cities. Air pollutants are produced by industry and motor vehicles but can also be generated indoors through cigarette smoke, use of printers, photocopy machines, production machines, etc. Air pollution, radiation and cigarette smoke generate health damaging free radicals and have a negative impact on human health. Nutritional antioxidants can neutralize free radicals and therefore have the potential to ameliorate the negative effects of pollution on health.

This study investigates the effects of intervention with a tailored multivitamin supplement containing antioxidants on the frequency of acute respiratory tract infection, diarrhoea and sick building syndrome (SBS, i.e. symptoms such as headache, watery eyes, throat irritation, dry cough, dry and itchy skin, dizziness, sickness, fatigue, inability to concentrate, etc.) in employees in Jakarta, Indonesia. The supplement used contains vitamins A, D, E, C, B6 and B12, folate, selenium, zinc, iron and copper (marketed in Indonesia as Redoxon Fortimun). It was developed on the well-established roles of its selected micronutrients in supporting the body's natural defence system and restoring resistance to infections by enhancing the three levels of immunity: epithelial barriers, immune cells and antibody production^(1,2).

The research was conducted in 350 employees (30–50 years) in 18 different companies in Jakarta. Eleven companies were picked randomly; their employees were given the supplement to be consumed daily for 3 months. Meanwhile, employees from 7 other companies not consuming the supplement served as the control group. The results showed that 50% of people working in office buildings experienced SBS but major differences were seen between the supplement and the control groups. The micronutrient supplement group had significantly lower rates of the following symptoms: 49% less headache, 45% less watery eyes, 52% less nasal congestion, 27% less respiratory infection and 41% less fatigue. Overall, the results showed that those employees, who consumed the supplement, experienced 65% less SBS symptoms.

In conclusion, 3 month supplementation with a tailored multivitamin containing antioxidants resulted in a significant reduction of SBS symptoms in employees exposed to the habitual levels of pollution experienced in a big city such as Jakarta. The potential impact on employees' long-term health as well as the economic impact on their work performance deserves further investigations.

1. Maggini S, Wintergerst ES, Beveridge S *et al.* (2007) *Br J Nutr* **98** (Suppl 1), S29–S35.
2. Maggini S, Beveridge S, Sorbara PJP *et al.* (2008) *Nutr Nat Resour* **3**, No. 098.