

## Letter to Editor

# Nutrients and Immunity Status of HIV-1-seropositive Drug Addicts

Dear Editor,

We report here the serum nutrients and immunity status ("immunonutrients profile") of HIV-1-seropositive drug addicts. Our investigation showed that the HIV-seropositive addicts had poor nutritional status with multiple nutrient deficiencies, particularly of protein, cholesterol, alpha-tocopherol, copper and zinc. They had an expected increase of immunoglobulins (IgG, IgM), monocytes, neutrophils and decrease of lymphocytes. The results were compared with non-HIV drug addicts.

It has been documented that multiple immunonutrient deficiencies are prevalent in HIV infection (Baum and Shor-Ponser, 1998; Baum *et al.*, 1995) and drug addiction (Varela *et al.*, 1997), and this is recognised as a significant prognostic factor in advanced disease (Salomon *et al.*, 2002). Multiple nutrient deficiencies progressively destroy immunity affecting various immune parameters.

The present study comprised of 10 HIV-1-sero-positive and twenty HIV-sero-negative drug addicts. HIV-1-seropositivity was screened and confirmed by ELISA and LIA (Line Immunoassay) using immunoassay kits (ABBOTT, UK). Analyses of immunonutrients were performed by spectrophotometry, HPLC, Atomic Absorption Flame Emission spectrophotometry and ELISA methods. Data were analysed by SPSS software package (version 10.0 SPSS Inc, Chicago, IL, USA).

Our results showed that the HIV-1-seropositive drug addicts had poor nutritional status, suffering from protein-energy malnutrition and multiple immunonutrient deficiencies (Table 1). These results correspond with the reports of others (Salomon *et al.*, 2002; Baum & Shor-Ponser, 1998; Baum *et al.*, 1995). The HIV-1-seropositives had increased IgG and IgM, and decreased lymphocytes, which might be due to HIV infection and multiple immunonutrient deficiencies or malnutrition (Varela *et al.*, 1997). The higher concentrations of neutrophils (neutrophilia) and monocytes (monocytosis) might also be associated with HIV infection.

It is revealed from this study that HIV infection induces a wide spectrum of immunonutrient deficiencies.

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**Table 1.** BMI and Immunonutrients profile of HIV-1seropositive drug addicts

Parameter	HIV-seropositives (n=10)	HIV- seronegatives (n=20)	Significance level
BMI	17.7±1.25	19.2±1.53	P=0.012 (t=2.68)
Haemoglobin (g/L)	92.5±43.5	132.2±13.4	P=0.001 (t=3.80)
Macronutrient			
Total proteins (g/L)	55.7±13.5	68.7±14.0	P=0.047 (t=2.80)
Albumin (g/L)	33.3±12.7	40.7±5.1	P=0.024 (t=2.29)
Cholesterol (mmol/L)	3.25±1.49	4.31±0.8	P=0.015 (t=2.58)
Vitamin (mmol/L)			
α-tocopherol	12.15±4.52	16.05±4.07	P=0.024 (t=2.39)
Ascorbic acid	16.15±9.83	19.45±12.3	P=0.433 (t=0.80)
Retinol	1.11±0.45	1.09±0.36	P=0.927 (t=0.09)
Mineral (mmol/L)			
Copper	18.49±4.85	22.36±4.41	P=0.037 (t=2.19)
Zinc	11.70±2.34	14.62±3.19	P=0.008 (t=2.85)
Iron	27.83±7.14	19.98±7.35	P=0.009 (t=2.79)
Immunoglobulin (g/L)			
IgG	8.41±1.42	6.86±1.48	P=0.011 (t=2.34)
IgA	3.07±1.08	3.11±1.15	P=0.944 (t=0.07)
IgM	3.39±1.08	1.66±0.57	P=0.000 (t=4.99)
Immune cells			
Lymphocyte	42.7±16.2	55.9±14.4	P=0.031 (t=2.26)
Monocyte	17.6±7.0	7.7±4.0	P=0.000 (t=4.99)
Neutrophil	126.2±26.2	122.5±21.8	P=0.685 (t=0.41)
Eosinophil	13.6±8.0	13.0±6.6	P=0.839 (t=0.22)

## REFERENCES

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