

## **Abstract:**

Observational studies have suggested that low serum beta-carotene concentrations may influence HIV-1 disease progression. However, randomized trials have not demonstrated beneficial effects of beta-carotene supplementation. To understand this discrepancy, we conducted a cross-sectional study among 400 HIV-1-seropositive women in Mombasa, Kenya, to correlate serum beta-carotene concentrations with several measures of HIV-1 disease severity. Beta-Carotene concentrations were significantly associated with biologic markers of HIV-1 disease progression (CD4 count, HIV-1 plasma viral load, serum C-reactive protein [CRP] concentration, and serum albumin level). In multivariate analysis, beta-carotene concentrations below the median were associated with elevated CRP ( $>10$  mg/l, adjusted odds ratio [aOR] 3.32, 95% confidence interval [CI] 1.99-5.53,  $P<0.001$ ) and higher HIV-1 plasma viral load (for each  $\log(10)$  copies/mL increase, aOR 1.38, 95% CI 1.01-1.88,  $P=0.04$ ). In the context of negative findings from randomized trials of beta-carotene supplementation in HIV-1-seropositive individuals, these results suggest that low beta-carotene concentrations primarily reflect more active HIV-1 infection rather than a deficiency amenable to intervention.