SEX AND ETHNIC DIFFERENCES IN VITAMIN A AND E LEVELS AND MATERNAL AND NEONATAL CORRELATIONS. M.C. McKenna*, L.L. Wright*, L.S. Alger*+ and S. Ullsperger*. Dept. of Pediatrics and Dept. of Obstetrics and Gynecology+, University of Maryland School of Medicine, Baltimore, MD 21201. (Introduced by Lois M. Roeder).

The purpose of this study was to determine the vitamin A and E levels in an inner-city, lower socioeconomic, obstetrical clinic population and their term or near-term infants. Infant cord blood (n=79) and maternal blood (n=77, antecubital vein) were obtained at delivery from mothers at the Univ of Maryland Obstetrics Clinic (most young teenage mothers go to a separate clinic are not included). Plasma retinol (ret) and α-tocopherol (α-T) were determined by HPLC. Maternal and infant vit A levels were 27.6±1.3ug ret/dl (mean±SEM) and 17.8±0.8ug ret /dl, respectively. Low vit A levels (<20ug/dl) were found in (25%) of mothers and 33/41 (80.5%) male and 22/37 (59.5%) female infants, respectively. More black male infants had low vit A levels (23/27, 85.2%) than white males (7/12, 58%), but the incidence of low levels was similar in black (19/29, 65.5%) and white (6/11, 54.5%) female infants. A significant correlation was found between maternal and infant levels for all female infants (n=40, r=.417, p<.01) and for black female infants (n=29, r=.64, p<.001), but not between maternal and male infant levels. Maternal and infant vit E levels were 12.5±0.6mg α-T/l (mean±SEM, and 2.2±0.09mg α-T/l, respectively. The incidence of low vit E levels <2.0mg/l was higher in males than females: black males=55.5%, mean=1.97±0.11mg α-T/l; white males=58%, mean=1.95±0.08 mg/l; black females=34.5%, 2.36±0.16mg/l; and white females=18.2%, mean= 2.45±0.14mg/l. Male infants appear to have a higher risk of vitamin deficiency than females, black male infants are particularly at risk.

Am J Clin Nutr 43(4):689; 1986.

OBSERVATIONS ON THE EFFECTS IN HUMANS OF CIS- AND TRANS-β-CAROTENE ISOMERS. CD JENSEN,* TW HOWES,* GA SPILLER, J SCALA*. Shaklee Research Center, Hayward, CA.

Cis rotation has reduced by 60% the vitamin A activity of β-carotene (BC) fed to rats. BC extracted by corn oil from the algae Dunaliella salina was found to contain 40% all-trans-BC (TBC) and 60% 9-monocis-BC (CBC). This BC source provided an opportunity to observe the effects of BC isomer consumption on serum and fecal levels (analyzed by HPLC) in humans. After a low carotene diet (10 days) and random placement into 3 groups, 16 healthy adults took 1 of 3 treatments (TX) for 7 days. Total BC intakes (mg/day) were: TX1=24; TX2=8; TX3 (placebo)=0. Fecal BC excretion suggested that the BC was about 50% absorbed. However, increases in mean serum isomers were seen only for TX1 TBC ($p<0.02$). CBC levels did not change for any TX ($p<0.05$). TX3 TBC levels were decreased ($p<0.02$).

TX	PRE-TX TBC	PRE-TX CBC	POST-TX TBC	POST-TX CBC
1	9.2+2.2	0.9+0.2	27.9+5.7	2.8+1.3
2	12.5+3.9	1.4+0.4	17.3+3.8	1.8+0.2
3	11.4±2.5	1.4±0.3	6.0±1.7	1.4±0.2

(Data are means ± SEM in mcg/dT.)

3 fecal samples collected from TX1 subjects at the end of the TX period showed fecal isomer concentrations slightly favoring TBC. The fact that BC appeared to be substantially absorbed, while TBC was the only serum isomer which increased, coupled with the result that fecal isomer concentrations favored TBC, support the theory that BC absorption in humans may involve isomerization to the possibly more biopotent all-trans state.