

SERUM LYCOPENE IN TYPE 2 DIABETICS WITH MICROALBUMINURIA AND ITS CORRELATION WITH ENDOTHELIAL DYSFUNCTION

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Background

- Lycopene - open-chain unsaturated carotenoid, imparts red colour to tomatoes
- Lycopene - claimed as the most powerful antioxidant
- Rotterdam study - serum lycopene was inversely associated with risk of atherosclerosis
- Low lycopene levels associated with oxidative stress and endothelial dysfunction.
- We studied serum lycopene in type 2 diabetics with microalbuminuria and correlated it with endothelial dysfunction (ED)

Materials And Methods

- **INCLUSION CRITERIA:**
 - Type 2 DM with dipstick positive microalbuminuria
- **EXCLUSION CRITERIA:**
 - Office BP, SBP > 140 mmHg, DBP > 90 mmHg,
 - Dipstick +ve proteinuria,
 - BMI > 25,
 - Smoker,
 - Presence of UTI, renal, cardiac, hepatic disease, any acute infection or inflammatory process,
 - Patient on nitrates / antioxidants
 - Failure to obtain informed written consent
- Baseline Investigations
 - FBS/PPBS
 - HbA1C
 - Complete Lipid profile
 - Routine Urine examination
 - ECG

We used three tests for endothelial function of low cost and suitable for use in a developing country:

- C-Reactive Protein (CRP) by ELISA
- Serum nitrate + nitrite by Griess reaction
- Common Carotid Artery - Intima Media Thickness (B-mode ultrasonography)

Carotid Intima Media Thickness by B Mode Ultrasound



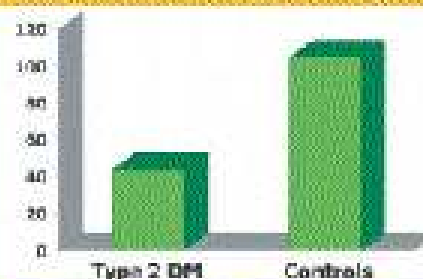
Observation and Results

- Mean age of cases was 46.5 ± 10.29 yrs and controls was 45.15 ± 10.29 yrs
- Cases and controls were comparable in baseline parameters & there was no significant difference between the two groups ($P=0.9$).
- Mean duration of diabetes in the study population was 13.367 ± 6.76 years.

Endothelial Dysfunction parameters in diabetics and controls

Parameter	Cases	Controls	P value
Serum Lycopene (ng/mL)	43.6 ± 25.31	105 ± 64.83	<0.0001
Mean serum CRP (mg/L)	5.095 ± 5.41	0.34 ± 0.7	<0.001
Mean serum nitrite + nitrate (micromoles/L)	51.3 ± 20.8	58.3 ± 31.9	<0.001
CCA-IMT (mm)	0.073 ± 0.01	0.056 ± 0.005	<0.001

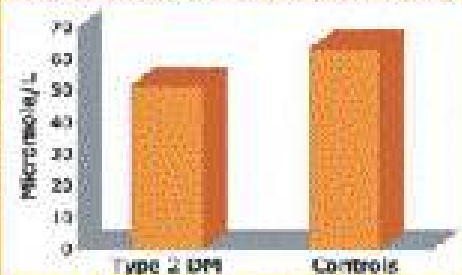
Mean Serum Lycopene (ng/mL)



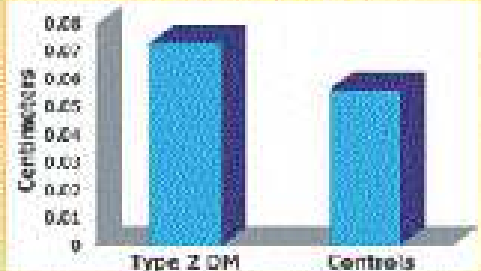
Mean serum CRP (mg/L)



Mean serum nitrite + nitrate (micromoles/L)



Mean Common Carotid Artery-Intima Media Thickness



Observation and Results

- Serum lycopene levels showed significant negative correlation ($P < 0.05$) with
 - CCA-IMT
 - HbA1C
 - CRP

Serum lycopene negatively correlates with CCA-IMT, CRP



Conclusions

- Type 2 Diabetics with microalbuminuria have lower lycopene levels with significant negative correlation with CCA-IMT, HbA1C and serum CRP
- To our knowledge this is the first study reporting inverse correlation between low serum lycopene and serum CRP in type 2 Diabetic patients with microalbuminuria
- Low serum lycopene may play a role in the genesis of endothelial dysfunction in type 2 Diabetics with microalbuminuria