

ASSESSMENT OF DNA DAMAGE AND OXIDATIVE STRESS OF GREEN TEA EPIGALLOCATECHIN-3-GALLATE (EGCG) BY COMET ASSAY

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Aim

Evaluate DNA damage and oxidative damage, measured by comet assay; lipid profile, liver function parameters and vitamins A and E levels during an interventional study with 90 days (T0 and T90) duration (T0 and T90) in 30 individuals with an EGCG intake of 225 mg/day.



Introduction

EGCG, the major polyphenol in green tea, has been shown to inhibit cancer cell growth and tumorigenesis *in vitro* and in animal models, particularly by eliminating cancer cells through induction of apoptosis but also by protecting normal cells against genotoxic hazards. However, increasing evidence indicates that EGCG produces ROS.

Results

Table 1 Characterization of voluntaries enrolled in the study

| Male | Female | Age | Height (cm) | Weight (kg) | Smoker | Non smoker |
|------|--------|-------|-------------|-------------|--------|------------|
| 10 | 20 | 19–43 | 155–195 | 45–108 | 1 | 29 |

Table 2 Lipid profile and liver function parameters determination prior (T0) and after 90 days (T90) of EGCG 225 mg daily capsule consumption

| | Triglycerides (mg/dL) | Cholesterol (mg/dL) | HDL (mg/dL) | LDL (mg/dL) | AST/GOT (U/L) | ALT/GPT (U/L) | GGT (U/L) | Ratio LDL/HDL |
|------------------------|-----------------------|---------------------|---------------|----------------|---------------|---------------|---------------|---------------|
| T0 (mean ± std. dev.) | 107.77 ± 45.07 | 183.40 ± 37.88 | 61.60 ± 13.81 | 100.30 ± 28.59 | 24.23 ± 8.9 | 25.37 ± 8.39 | 19.13 ± 18.82 | 1.68 ± 0.49 |
| T90 (mean ± std. dev.) | 119.17 ± 41.44 | 181.67 ± 31.11 | 63.53 ± 14.85 | 93.97 ± 22.18 | 25.40 ± 9.29 | 30.73 ± 22.01 | 22.07 ± 25.38 | 1.55 ± 0.53 |

Results are presented as (mean ± SD; N = 30)

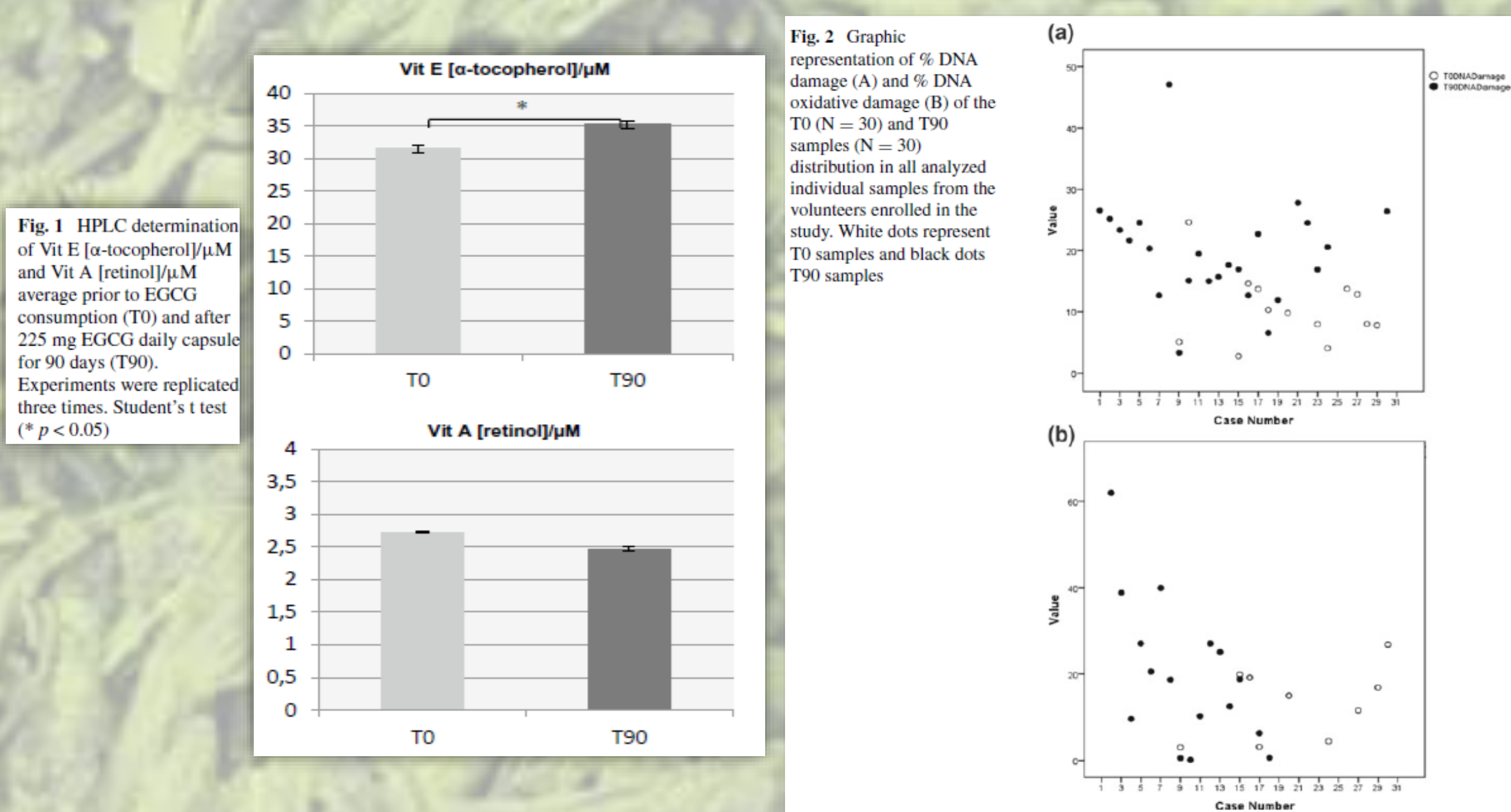


Table 3 % DNA damage and % DNA oxidative damage means (mean ± SD; N = 30) prior to EGCG consumption (T0) and after 90 days of 225 mg EGCG/daily capsule (T90) (mean ± SD; N = 30)

| | % DNA damage mean ± std. dev | % DNA oxidative damage mean ± std. dev |
|-----|------------------------------|----------------------------------------|
| T0 | 10.40 ± 11.08 | 13.33 ± 8.17 |
| T90 | 19.77 ± 12.70 | 19.87 ± 5.65 |

Methods

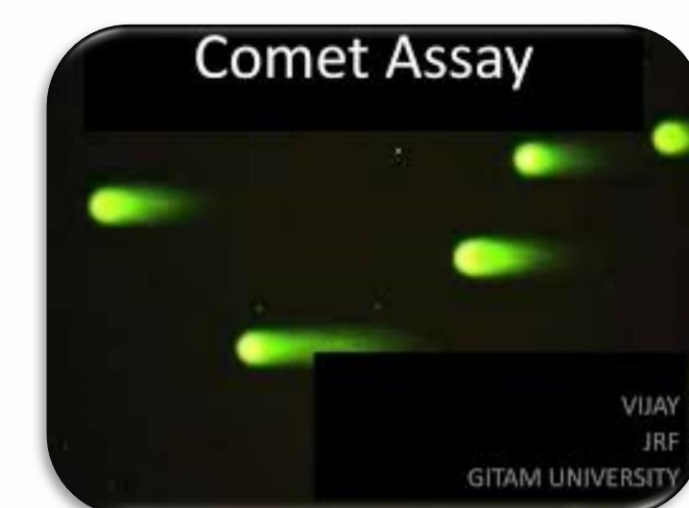
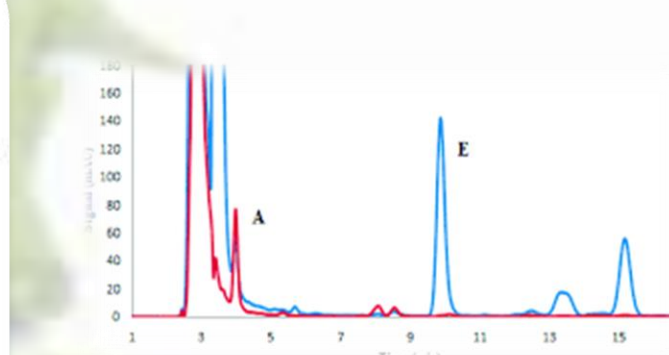
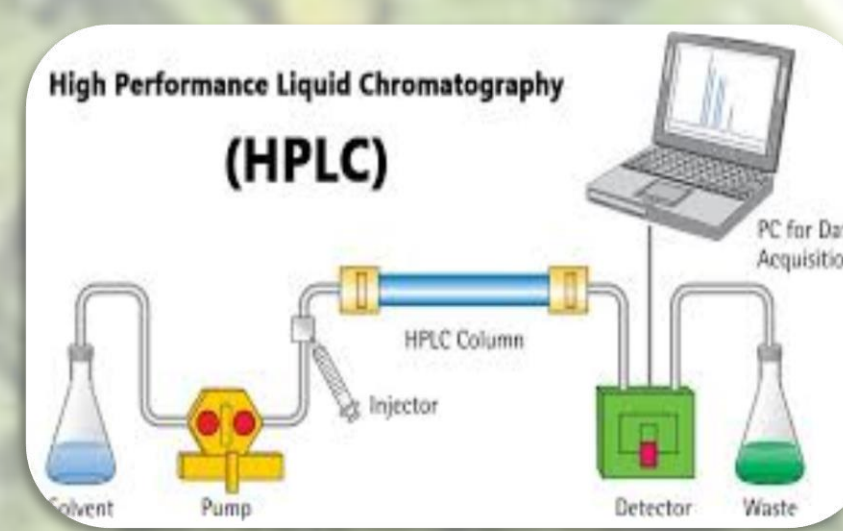
Interventional study during 90 days, participant's ingested 1 capsule of green tea extract (225 mg EGCG) daily



Hematological cardiovascular risk factors including lipid profile and liver function parameters were assessed using colorimetric methods.



Vitamins A and E in serum were quantified by HPLC and analysis of DNA damage and oxidative damage was performed by comet assay



Conclusions

- ✓ Increase of DNA damage and DNA oxidative damage after 90 days of EGCG consumption was observed.
- ✓ Lipid profile and liver function parameters were not affected by EGCG and serum levels of vitamin E increased, but not vitamin A
- ✓ **The results suggest that EGCG can induce DNA damage, possibly due to ROS induction, with associated increase of the antioxidant vitamin E, however without alteration of hematological cardiovascular risk factors.**

Aknowledgements

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