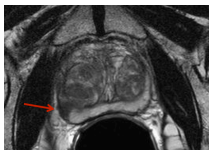
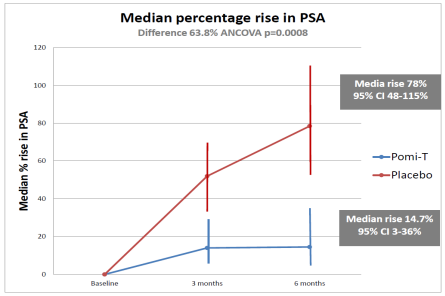
A polyphenol rich food pill significantly reduces both PSA and MRI defined disease progression

Professor Robert Thomas, Cranfield University. Bedford and Addenbrooke's, Cambridge University Hospitals. Dr Muhammad Shaikh Radiology Department, Bedford Hospital NHS Trust. Ms Dorothy Daiyi Yang, University of Cambridge School of Clinical Medicine. Ms Madeleine Williams, The Primrose Unit Bedford Hospital NHS trust.



Introduction: A National Cancer Research Network supported double blind RCT evaluating a capsule containing purified pomegranate, green tea, turmeric and broccoli received world-wide interest from academic institutions and patient advocacy groups, as it demonstrated a 63% slower PSA progression in men with prostate cancer managed with surveillance (ANCOVA p=0.0008)[1] Figure.1. One criticism, however, of this study was it did not measure intra prostatic disease status so there was a small possibility that this was just a PSA effect, despite the fact that these ingredients were specifically chosen not to have phytoestrogenic effects and there was no influence on serum testosterone.

Rationale for this study: Although we believe the significant effect on PSA in the original Pomi-T study was likely to be via the known anti-neoplastic properties of these foods (see appendix) the rationale for this current study, was to correlate PSA dynamics in men taking long term Pomi-T with changes on their annual MRI which are now performed routinely in our institution.



The design: We evaluated 204 high resolution diffusion weighted MRI from 102 men who had at least two MRI scans one year apart, who were taking the polyphenol rich food supplement, Pomi-T, as part of the original study[1] or had started taking of their own accord. All paired MRI's, reviewed by a consultant radiologist and again within our Hospital Multidisciplinary Team meeting were categorized into:

- **A-B.** Disease worse (18%)
- **C-D.** Disease better (11%)
- **E-F.** No change in the size of the disease (51%)
- **G-H.** No disease seen on either image (20%)

The results (see figure 2):

- There was an average 24.3% drop in PSA between the first and second MRI (7.98 - 6.04 microg/dl).
- There was a mean 44.5% rise in PSA in men with MRI progression
- There was a mean 26% fall in PSA in men with MRI stable disease, no disease seen or regression
- This 70.5% difference was highly statistically different (ANOVA multiple comparisons test p<0.0001).
- Reassuringly no man with MRI progression seen had a falling PSA and all men with MRI shrinkage of disease had a falling PSA.

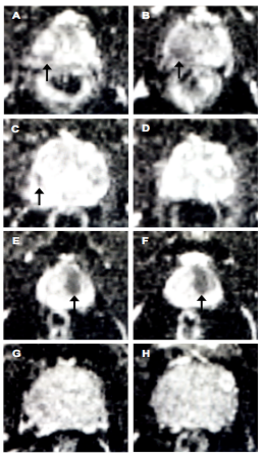
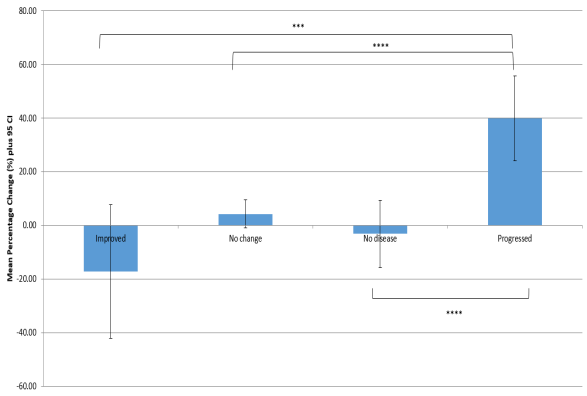


Figure 2. Diffusion coefficient maps from consecutive DW-MRIs of four patients. Areas of restricted diffusion are indicated with black arrows. On (A), an 11 mm x 8 mm area can be seen in the right peripheral zone which increased to 18 mm x 13 mm on the second scan (B). (C-D) there is a small area of restricted diffusion (C) which can no longer be seen one year later (D). (E-F) no change. (G-H) no disease.

Conclusion: The strong link between PSA dynamics and MRI tumour definitions provides reassurance that PSA effect of pomi-T correlates with underlying MRI tumour status.



Refs: Thomas, et al A double blind, placebo controlled RCT evaluating the effect of a polyphenol rich whole food supplement on PSA progression in men with prostate cancer - The UK National Cancer Research Network (NCRN) Pomi-T study. Prostate Cancer & Prostatic Diseases (2014) **17,** 180–186.

Appendix: The ingredients of Pomi-t have demonstrated anti-cancer properties in studies:

Green tea, rich in epigallocatechin gallate, blocks ornithine decarboxylase, an enzyme that signals cells to bypass apoptosis. Green tea inhibits proliferation, de-differentiation and angiogenesis.

Curcumin increases apoptosis, prevents the invasion and migration of cells, inhibits tyrosine kinase activity of the EGFR and cox-I inhibits the growth of breast cancer stem cells without harming normal breast cells.

Pomegranate, rich in ellagic acid, inhibits prostate cancer cell proliferation and induces apoptosis. In breast cancer cell lines, it increases markers of cell adhesion and reduced migration.

Broccoli, rich in isothiocyanates, inhibit growth and promote apoptosis of cancer cells. In humans, regular intake down-regulates genes linked to cancer growth, and up-regulates genes linked to cancer suppression.

More information:
The original Pomi-T trial was a non-commercial academic study funded by the charity Prostate action
Details of the Pomi-T trial such as background and design, please see our trials website: **www.cancernet.co.uk/pomi-t.htm**
Details of the currently available Pomi-T supplement, please see the manufacture's website: **www.pomi-t.com**