D-MANNOSE, CRANBERRY AND VITAMIN C (CYSTOMAN 100MG) ARE EFFECTIVE IN PREVENTING URINARY TRACT INFECTIONS IN MULTIPLE SCLEROSIS SUBJECTS.

Maria Laura Lopes De Carvalho, MD
Guido Francavilla, MD
Roberta Motta, MsN
Giampaolo Brichetto, MD

Italian MS Society, Rehabilitation Centre, Genova, Italy

Introduction

Bladder symptoms in patients with MS (PwMS) are common and distressing but also highly amenable to treatment. In particular PwMS showed an high prevalence of urinary tract infections.

Introduction

It has been suggested from literature that D-mannose, cranberry juice, and vitamin C are useful in the prevention and treatment of urinary tract infections.

Introduction

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J Med Food. 2011 Jul-Aug;14(7-8):739-45. Epub 2011 Apr 11.

Oral consumption of cranberry juice cocktail inhibits molecular-scale adhesion of clinical uropathogenic Escherichia coli.

Tao Y, Pinzón-Arango PA, Howell AB, Camesano TA.

Department of Chemical Engineering, Worcester Polytechnic Institute, Worcester, Massachusetts 01609, USA.

Abstract

Cranberry juice cocktail (CJC) has been shown to inhibit the formation of biofilm by uropathogenic Escherichia coli. In order to investigate whether the anti-adhesive components could reach the urinary tract after oral consumption of CJC, a volunteer was given 16 oz of either water or CJC. Urine samples were collected at 0, 2, 4, 6, and 8 hours after consumption of a single dose. The ability of compounds in the urine to influence bacterial adhesion was tested for six clinical uropathogenic E. coli strains, including four P-fimbriated strains (B37, CFT073, BF1023, and J96) and two strains not expressing P-fimbriae but exhibiting mannose-resistant hemagglutination (B73 and B78). A non-fimbriated strain, HB101, was used as a control. Atomic force microscopy (AFM) was used to measure the adhesion force between a silicon nitride probe and bacteria treated with urine samples. Within 2 hours after CJC consumption, bacteria of the clinical strains treated with the corresponding urine sample demonstrated lower adhesion forces than those treated with urine collected before CJC consumption. The adhesion forces continued decreasing with time after CJC consumption over the 8-hour measurement period. The adhesion forces of bacteria after exposure to urine collected following water consumption did not change. HB101 showed low adhesion forces following both water and CJC consumption, and these did not change over time. The AFM adhesion force measurements were consistent with the results of a hemagglutination assay, confirming that oral consumption of CJC could act against adhesion of uropathogenic E. coli.

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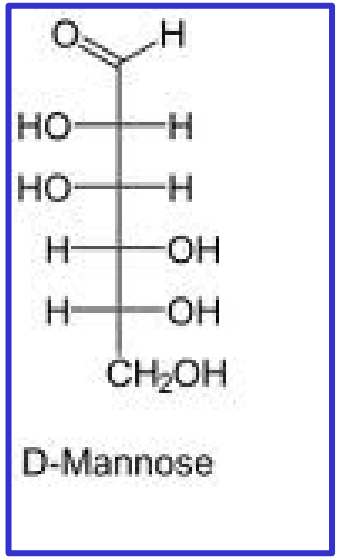
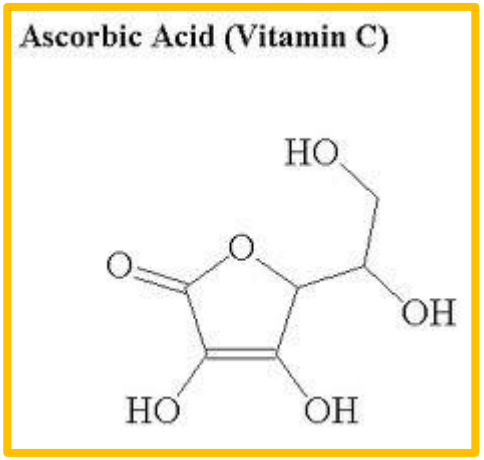
⊕ **Publication Types, MeSH Terms, Substances, Grant Support**

⊕ **LinkOut - more resources**

Aim of the Study

Evaluate the effect of d-mannose, cranberry and vitamin C in urinary infections in PwMS.





Materials and Methods

Multiple Sclerosis Subjects followed as outpatients at AISM Rehabilitation Centre, Genova Italy, were recruited in this study.

Inclusion criteria:

- Clinically defined MS following McDonald Criteria.
- Signed informed consent.
- Post-void-residual (PVR) major than 100ml.
- History of recurrent urinary tract infection with or without intermittent catetheterization

Materials and Methods

Exclusion criteria:

- Patients with indwelling catheter
- Patients with history of gynecological infections or inflammatory diseases
- Patients with urological abnormalities
- Patients with severe cognitive dysfunction or psychiatric disorders that could interfere with participation

A simple-blind randomized design study was used, with three assessments at

- T0 (baseline –30 days from drug assumption)
- T1 (day one of treatment)
- T2 (day 90 of treatment).

Materials and Methods

Subjects were divided into two groups in a randomized way provided by a computer:

- **placebo group (PG)**
- **treated group (TG)**

- **The medication used was d-mannose 100mg - cranberry 40mg – vitamin c 60mg capsule or an identical placebo capsule.**
- **Active or placebo group had to take medication for 90 days - two capsule/day**

- **Examining physician and subjects were blind.**

Materials and Methods

- The following measures and clinical scales were performed at T0, T1, T2:
  - number of symptomatic urinary infections (patient diary): T0 (30 days before treatment) and T2 last 30 days of treatment
  - Urine culture:
    - before treatment 1 T0, 1T1
    - during treatment: after 30 days to start the treatment; after 60 days to start the treatment and at the end= T2
  - standardized questionnaire for urinary symptoms at T0, T1, T2
  - 5 days Bladder diary: frequency, mean n° episodes of incontinence, nocturia, urgency T0, T1 and T2
  - post void residual with Bladder Scan: T0, T1, T2

OUTCOMES

As outcomes the following measures were considered:

- number of urinary tract infections; negative urine culture after treatment – **Primary outcome**
- PVR, urgency incontinence, nocturia, urgency, frequency – **Secondary outcomes**

FOR THIS PRELIMINARY RESULTS WE TAKE INTO ACCOUNT T1 vs T2:

  - PRIMARY OUTCOME: Becomes negative urine culture from T1 to T2
  - SECONDARY OUTCOMES: PVR (bladder scan) ; urgency incontinence, nocturia, urgency, frequency – (5day bladder diary)

Materials and Methods

Statistical analysis was performed taking into consideration TIME (T1-T2) and GROUP (treated and placebo) as independent factors and outcome as dependent factors running a Repeated Measure Analysis of Variance.

$P<0.05$ was considered for significance

Demographical and Clinical Data

N. Subjects = 21			Disease Course		
Gender	Female	Male	RR	SP	PP
	76%	24%	58%	33%	9%

	Mean	D.S.
Age (years)	56	± 9
Disease duration (years)	15,7	±9.2
Urinary symptoms duration (years)	9,3	±8.1
EDSS	5,9	± 0.07

Results

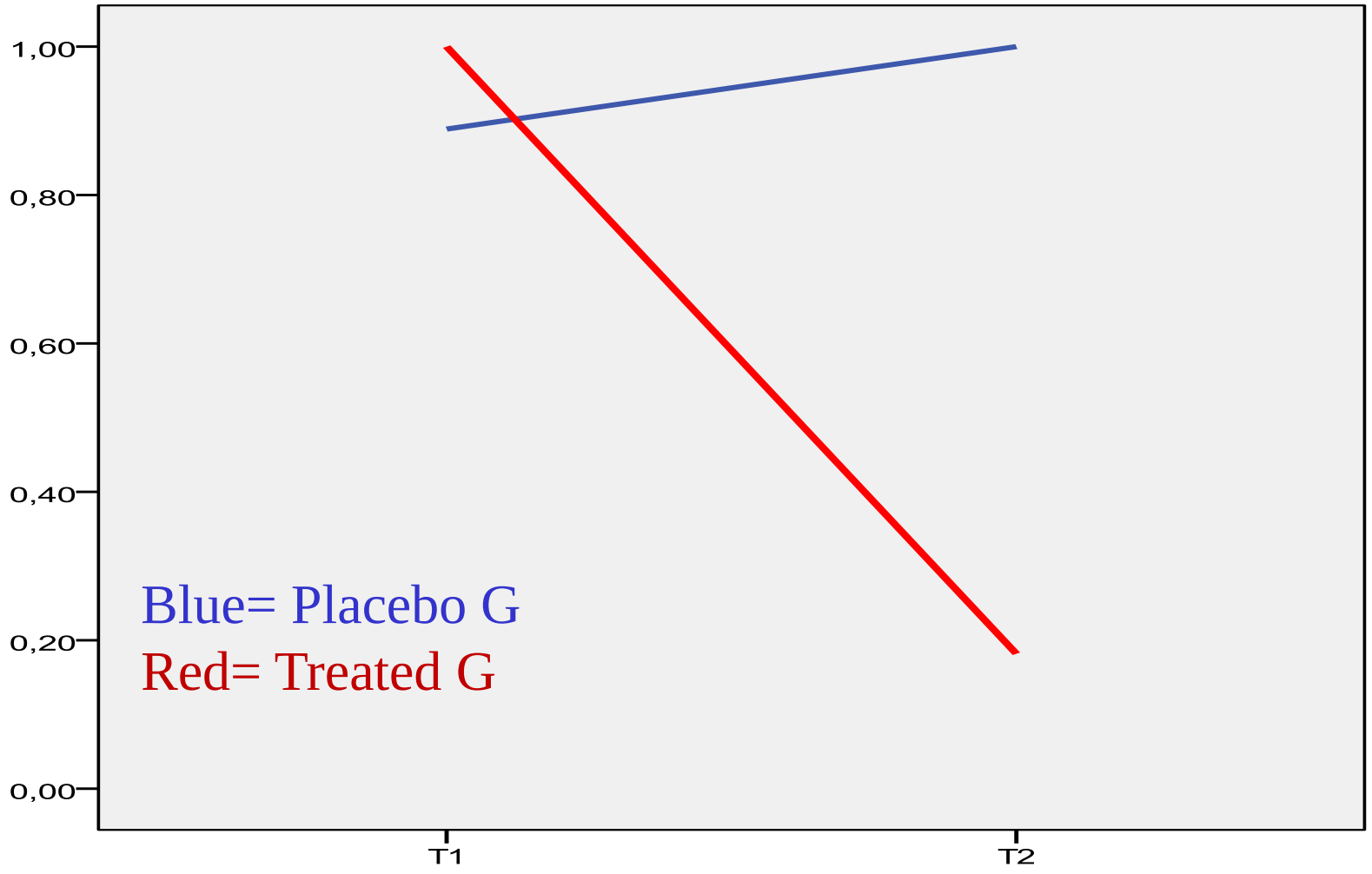
- 11 subjects with MS were enrolled in treated group (TG) whereas 10 subjects were assigned to placebo group (PG).

➢ Statistical analysis, taking into account T1 (begin of treatment) and T2 (end of treatment), showed a significant reduction for:

  - **Becomes negative urine culture ($p<0.05$)**
  - **Frequency ($p<0.05$)**

Results

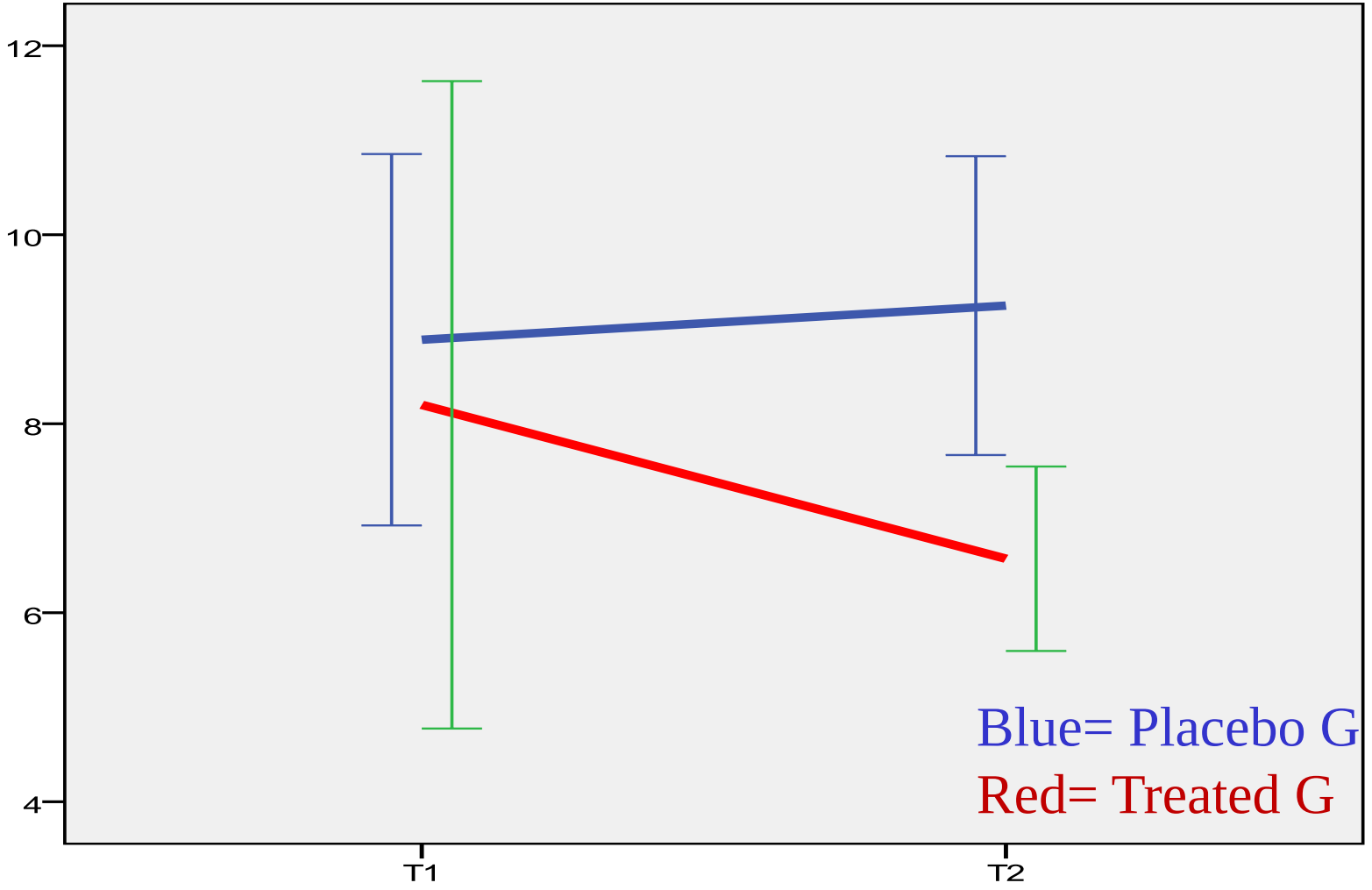
Becomes negative urine culture from T1 to T2



P<0.05

Results

Frequency



P<0.05

Conclusions

- Results showed that the assumption of D-mannose, cranberry and vitamin C could be useful to prevent urinary tract infections and to reduce frequency.
- The study didn't show changes in urgency, incontinence, nocturia probably because these symptoms were due to the neurological bladder.
- No changes in PVR as expected: retention is the risk factor for UTI, it's a cause not a consequence
- The study has been conducted with a small number of subjects, further studies are needed in order to confirm these results.

Thank You