

# Processed Tomatoes on Vasodilatation, Insulin, Glucose, and c-Reactive Proteins (hsCRP)



## in Overweight and Obese Men and Women

Rose M Giordano<sup>1</sup>, Mandeep Cheema<sup>1</sup>, Tissa Kappagoda<sup>2</sup>, Yumei Cao<sup>4</sup>, Jack Cappozzo<sup>3</sup>, Gwen Young<sup>5</sup>, Penny Kris-Etherton<sup>4</sup>, and Britt Burton-Freeman<sup>1,3</sup>

Depts. of Nutrition<sup>1</sup> and Internal Medicine<sup>2</sup>, University of California, Davis, CA 95616 and The National Center for Food Safety and Technology, Summit-Argo, IL 60501<sup>3</sup>, Pennsylvania State University, University Park, PA 16802<sup>4</sup>, Kagome USA<sup>5</sup>

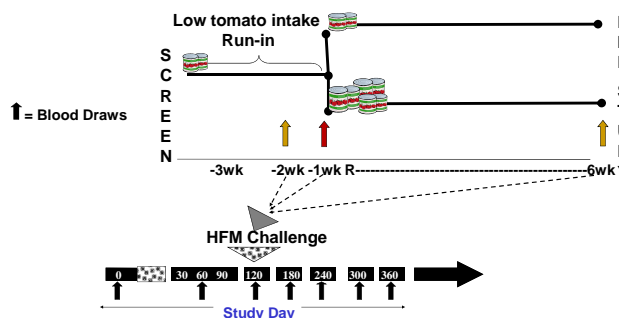
### Background



- The American (westernized) dietary pattern is linked chronic disease risk, including cancer and vascular diseases, which are the major causes of morbidity and mortality.
- Epidemiological studies suggest a protective relationship between consumption of tomato-based products and chronic disease.

### Study Design

- The study is a randomized, 2-arm, parallel design; In-lab meal challenge of a standard 40% fat meal to be consumed either with or without concurrent intake of tomato products (ie., paste, 6 Tbs). Dietary manipulation in a free-living setting to achieve either a high (~5 servings/d) or low ( $\leq 1$  serving/d) intake of processed tomato products
- Clinical endpoints include flow mediated dilation (FMD), inflammatory markers, and plasma lipids.



### Specific Aims

- To determine effects of a high fat meal (HFM) known to induce oxidation, inflammation, and reduce vasoreactivity overweight or mildly obese adults.
- To compare the effect of high vs. low intake of processed tomatoes for 6 weeks on biomarkers of endothelial function, inflammation and oxidative stress.

### Results

Subject characteristics:		Mean +/- SD
Postprandial high fat meal challenge, TOM vs Pbo		Females = 14 Males = 9
Age	yrs	41.7 ± 12.8
Females		42.2 ± 13.9
Males		41.0 ± 11.5
Body Weight	kg	85.6 ± 14.6
Height	cm	170.1 ± 10.2
Waist Circumference	cm	95.0 ± 17.4
Females		91.4 ± 20.3
Males		100.7 ± 10.3
Body Mass Index (BMI)	kg/m <sup>2</sup>	29.5 ± 3.6
Females		29.6 ± 3.8
Males		29.3 ± 3.5
Systolic Blood Pressure	mmHg	120.6 ± 12
Diastolic Blood Pressure	mmHg	82.3 ± 11.4
Cholesterol	mg/dL	194.4 ± 40.1
Triglycerides	mg/dL	122.5 ± 71.2
HDL	mg/dL	54.3 ± 35.3
LDL	mg/dL	132.1 ± 39.8
Glucose	mg/dL	87.5 ± 19.2

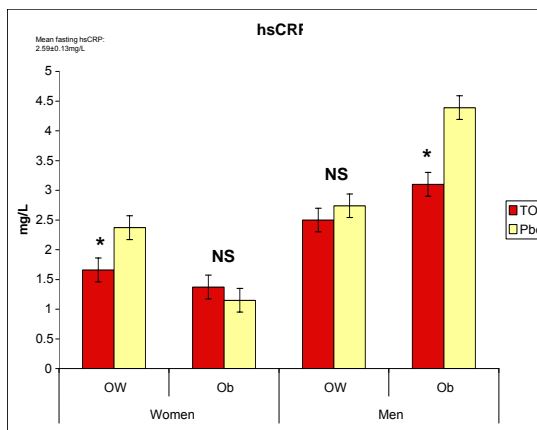
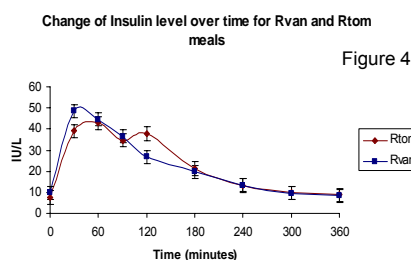
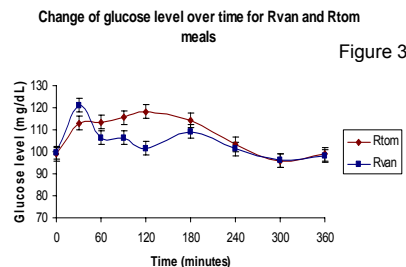


Figure 1: hsCRP is generally lower in men than women. The hsCRP response to the high fat meal differs between men and women depending on BMI status ( $p=0.006$ ). TOM attenuated the meal-induced inflammation in overweight women (OW, BMI 25-29.9) and obese men (Ob, BMI >30), as measured by hsCRP. ( $p<0.05$ ) from Pbo response. NS= Not significantly different



Figure 2: Tomato had no effect on FMD after the HFM during run-in after the HT vs LT HFMt (HT: 0.358mm ± 0.01, LT: 0.370mm ± 0.015 (p=NS)).



### Conclusion

These findings suggest that processed tomatoes may provide a protective role on inflammation in the overweight population. However, increasing adiposity may negate the benefits of diet on endothelial function.

Sponsored by: the Tomato Products Wellness Council.  
<http://www.tomatowellness.com/>

