

The Effects of Health Information on the Acceptability of a Functional Beverage Containing Fresh Turmeric

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Virginia Tech
October 2018



Overview

Background

Research Question

What we wanted to do?

What we did?

Results & Discussion

Conclusion





Diet and Health

- 5 of the top 10 leading causes of death associated with chronic diseases in the US is associated with food/nutrition
 1. Heart disease
 2. Cancer
- Cancer and heart disease make up 46% of annual death in the US²
- Risk factors: tobacco, alcohol abuse, physical inactivity, high blood pressure, high FBG, obesity, and **poor diet**



Functional Foods and Beverages

“Foods containing significant levels of biologically active components that impart health benefits beyond basic nutrition when consumed in typical or optimal serving sizes.”

- Less than 50% of consumers → have enough information about Functional foods
- By 2020, global market will be worth **\$192 billion**⁵



Turmeric

- yellow/orange spice that comes from the medicinal plant Curcuma Longa (same plant family as ginger)
- cultivated in the tropic areas of Asia
- growing season is from Oct- Feb

Traditional use

- Flavor and coloring
- Ayurvedic/Chinese medicine¹⁵
 - Anti-inflammatory agents
 - Stomach/liver problems
 - Wound healing
 - Digestive problems



Fresh Turmeric vs. Dry Turmeric

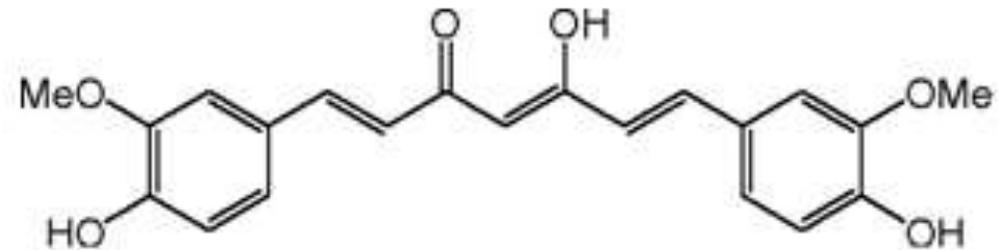
- Turmeric is sensitive to high temperatures and thermal heating processes¹⁷

Curcuminoids

- Biologically active compounds found in turmeric that make up the yellow pigment in the rhizome

Functions:

- Antioxidants
- Anti-inflammatory
- Anti-infectious agents
- Wound healing assistant



Curcumin

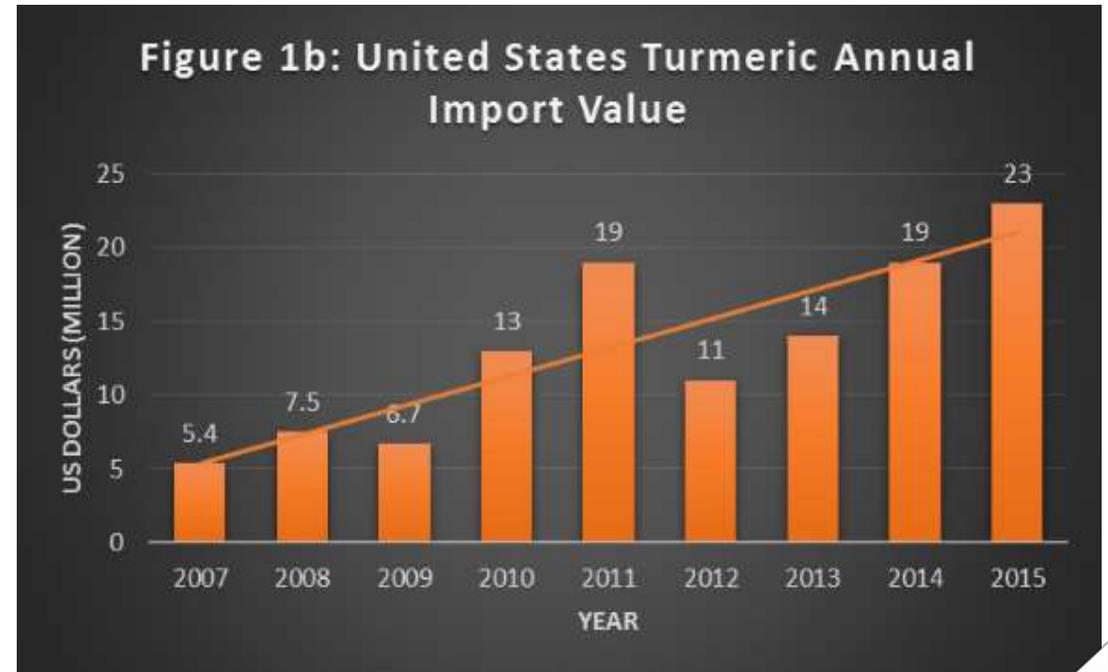
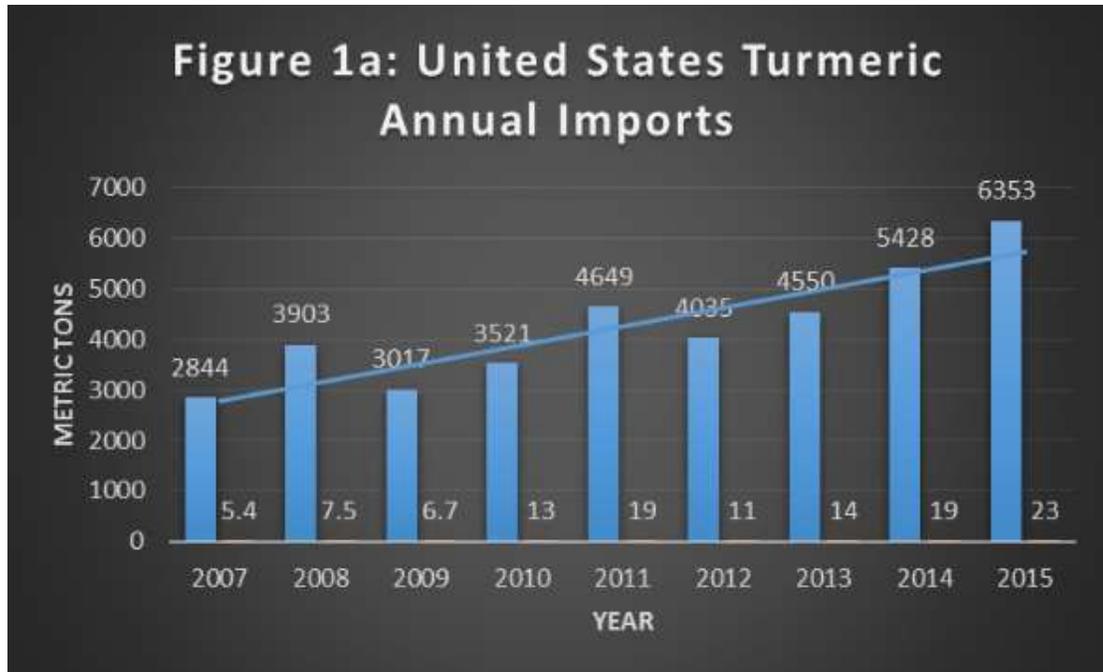
Polyphenols and Antioxidants

- **Food/beverages rich in polyphenols → bitter taste**
- **Polyphenols**-recognized for its anti-inflammatory and antioxidant properties
- **Antioxidants**- protect cells and tissues from oxidation
- Oxidative stress induced chronic disease
 - Cardiovascular
 - Inflammatory
 - Forms of cancer



Growth of Interest

- US imports of turmeric increased 123% between 2007-2015¹⁸
- \$18 million import value increase¹⁸



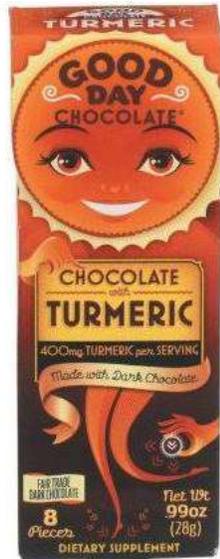
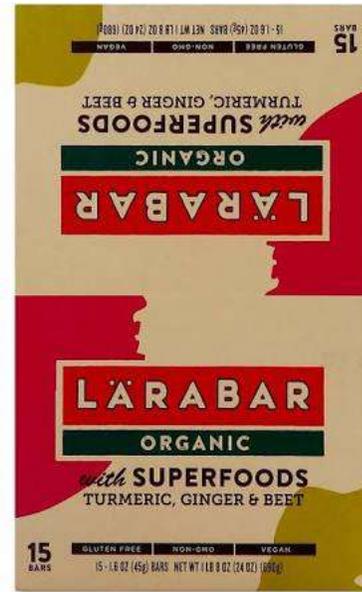
Growth of Interest

- Top 10 best selling supplement in the US
- Turmeric-based products grew 40% and reached \$30 million from May 2016 to May 2017
- Powder, extract, tablets, tea, ground, fresh

2016-2017 Google Food Trends

- Listed at top trending functional food
- 56% increase of “interest in turmeric”
- 3.9 million views about Turmeric videos on YouTube





Research Question

Can health information, related to turmeric, impact the acceptability and sensory scores of a functional beverage containing fresh turmeric in a quantity that improves its antioxidant capacity?





What we wanted to do?

1. How much turmeric should we add to the beverage to significantly increase the antioxidant capacity and polyphenolic content
2. We wanted to do a taste test on this beverage to see what happened to acceptability and taste!
3. Evaluated what happened to acceptability of the beverage when we get health information.
4. Looked at how age, gender, experience with turmeric impacted beverage acceptability.



Turmeric Beverage Ingredient

Ingredients (serving size: 8 oz)

- 2 oz mango, frozen
- 2 oz pineapple, frozen
- ½ banana, frozen
- 1 tbsp apple cider vinegar
- ¼ cup almond milk
- Beverage with four quantitative of Turmeric:

Dose of fresh turmeric:

- 0, 7,14,22 gr



What we did:

■ Antioxidant Capacity & Polyphenolic Content

- Conducted by Dr. Rafat Siddiqui at the Agricultural Research Station, located at Virginia State University
- Analyzed the Antioxidant capacity and the Polyphenolic content in four doses of fresh turmeric beverage

■ Sensory Evaluation Test

- Evaluated two samples
 - Control beverage (no turmeric)
 - Functional beverage (turmeric)
- 2 conditions
 - “health information” condition
 - “no health information” condition



“Health Information”

Control beverage:

“You will be tasting a fruit smoothie. Please rank your liking of this beverage.”

Functional beverage:

“You will be tasting a fruit smoothie with fresh turmeric. Fresh turmeric is a root that adds a significant amount of antioxidants into the beverage. Antioxidants reduce the risk of certain diseases, such as heart disease and multiple forms of cancer, by protecting the body from damage caused by harmful molecules. Please rate your liking of the beverage.”



What we did?

- **Food motives**

- Food Choice Questionnaire (1-not at all important, 4-very important)
- **health**, mood, convenience, **sensory appeal**, natural content, price, environmental protection, familiarity
- 3 health and sensory food motive groups (weak, moderate, strong)

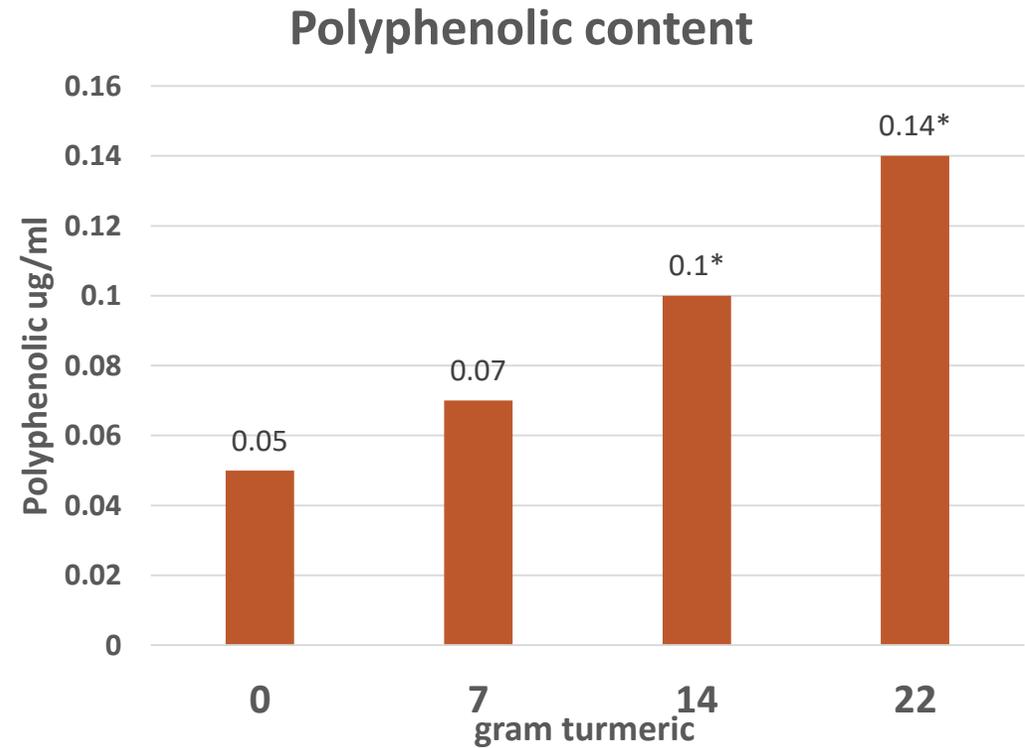
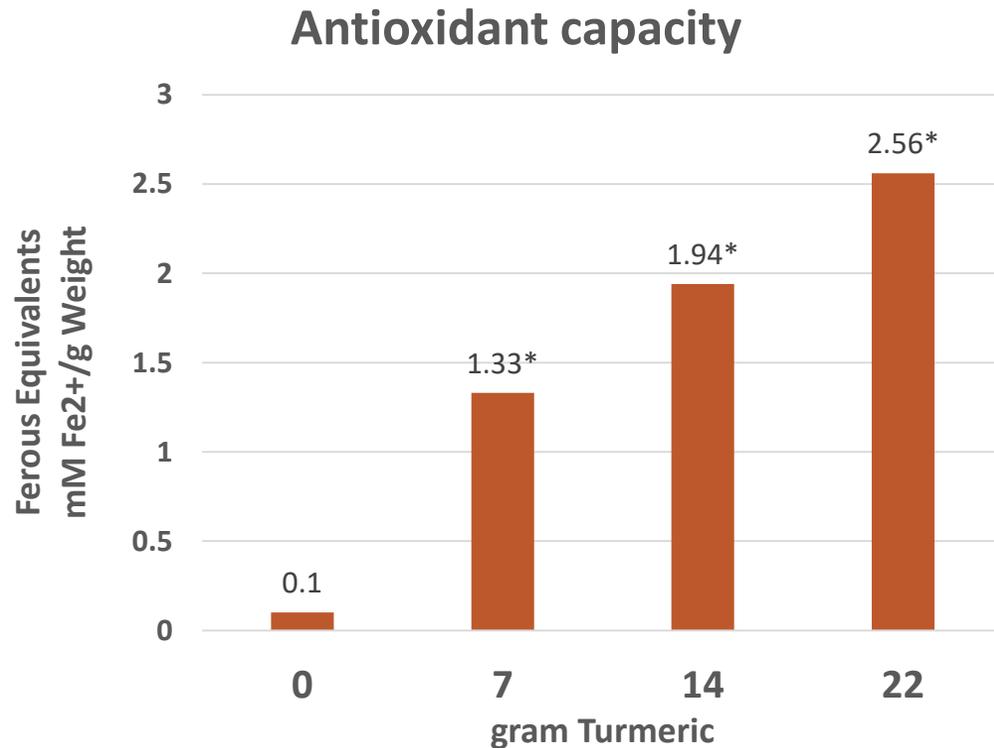
- **Personal factors**

- Age and gender
- Interest in antioxidants (1-4)
- Turmeric familiarity (yes/no)



Results

Antioxidant capacity and Polyphenolic content:



Results

- Significant differences in Acceptability score between those who received health information and those who did not.
- Participants with health information consider sensory appeal significantly more important when making food choices than participants without health information's
- The appearance, taste and aftertaste of the beverage with Turmeric was rated as more pronounced than the beverage without Turmeric by those who received health information!
- Participants who were familiar with turmeric had a higher acceptability score of the functional beverage than participants who were unfamiliar with turmeric.

Results

Acceptability Score:

- **No health information:** not a significant difference in the acceptability score between the control and functional beverage.
- **With health information:** the functional beverage was considered more acceptable than the control beverage
- ✓ Results showed that the provision of health information significantly impacted the acceptability scores of the functional beverage

Results

Sensory Scores:

- The appearance, taste and aftertaste of the beverage with Turmeric was more pronounced than the beverage without Turmeric by those receiving health information!
- There were no significant differences in acceptability scores and sensory scores between the control and functional beverage between females and males, as well as, the different age groups
- Participants with a “high” level of interest in antioxidants scored the functional beverage significantly higher than participants with no interest in antioxidants

Conclusion

Health information related to a functional food (Turmeric Beverage) can increase consumer's attitudes or behaviors towards the food . This is particularly true for consumers who are interested in the health aspects of food.

