

# **OJ Research and Messaging:**

*Focus on Immunity*

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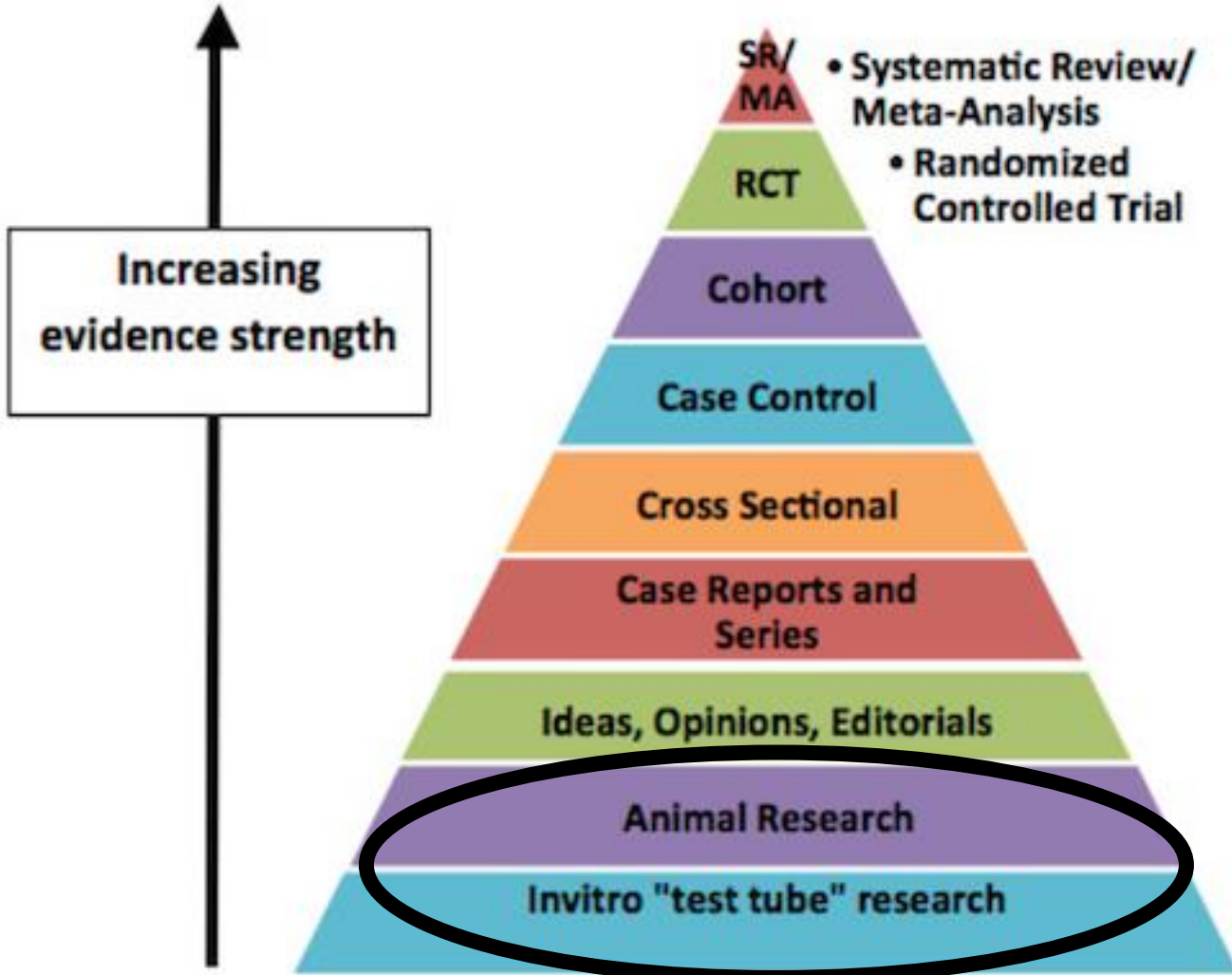




# Research Review and Update

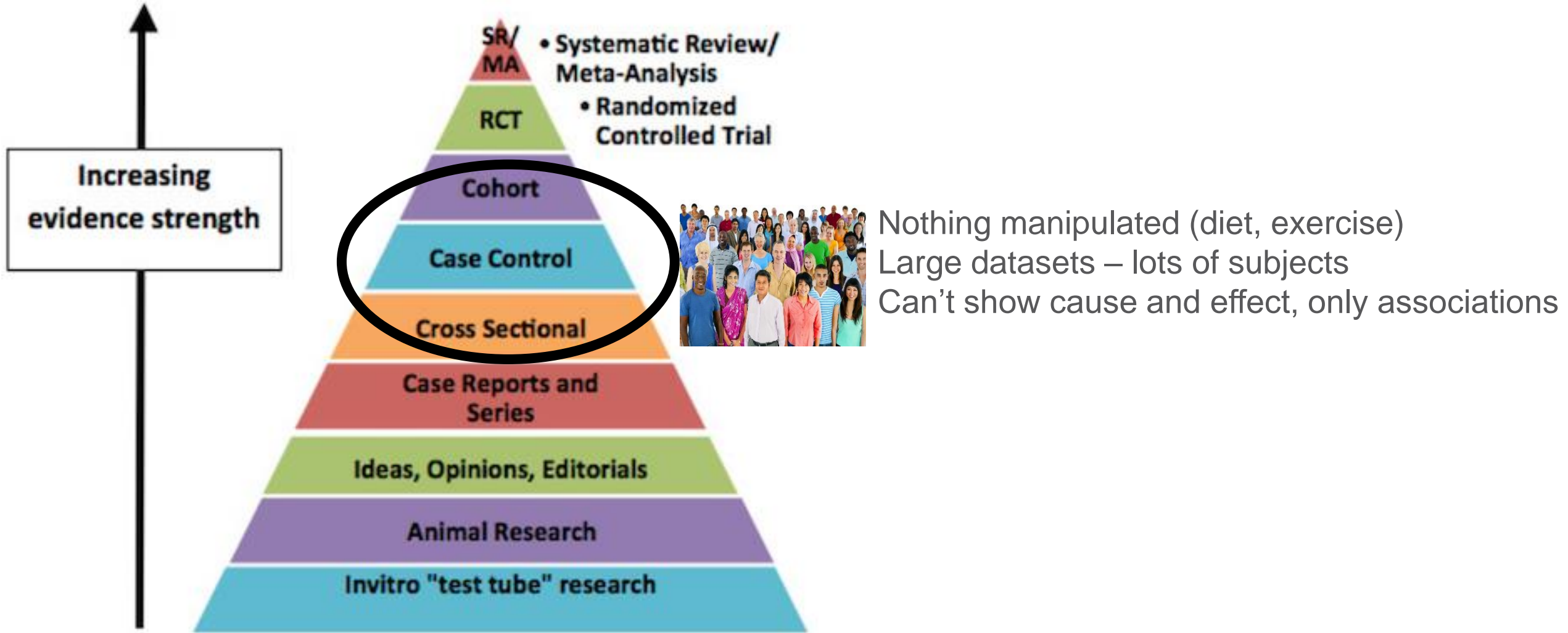


# Nutrition Research Pyramid

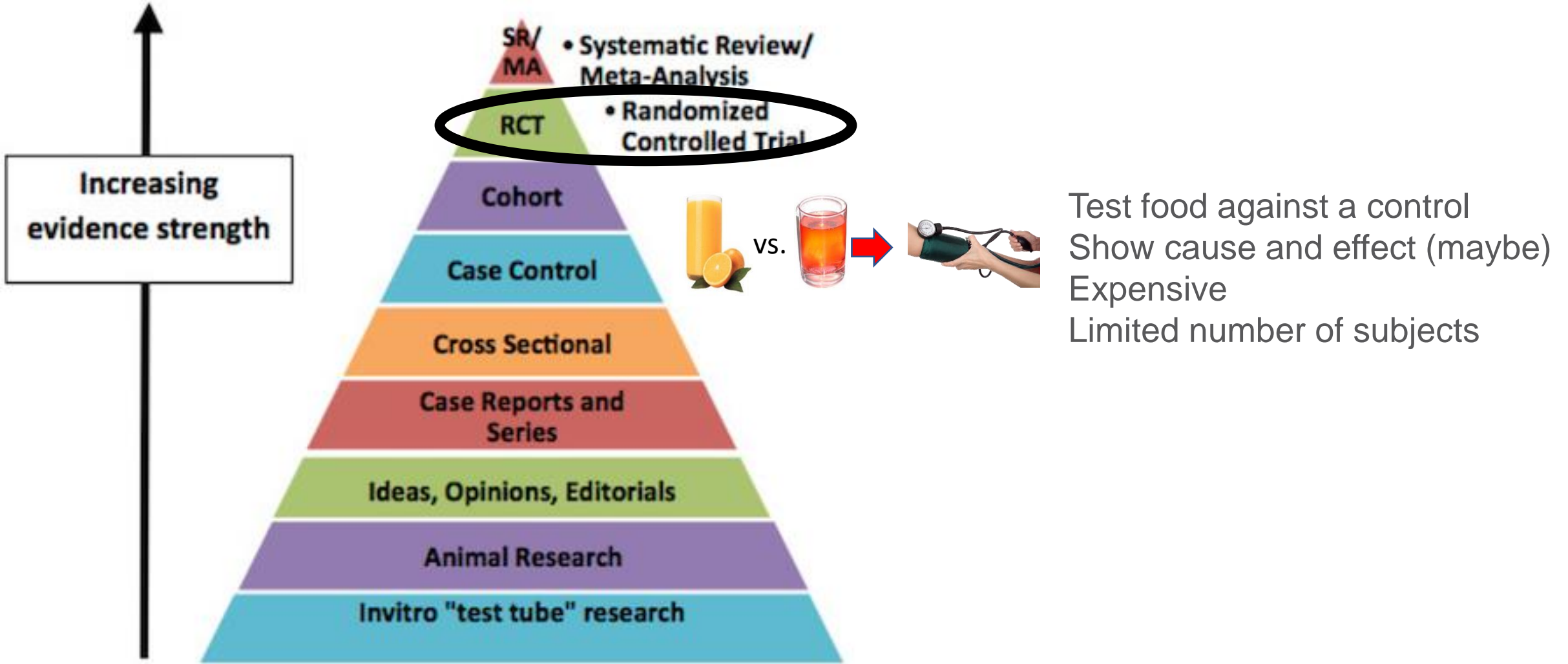


Relatively quick and inexpensive  
Doesn't necessarily mimic the human body

# Nutrition Research Pyramid



# Nutrition Research Pyramid



Credit: Univ of New Hampshire/SUNY Downstate. Adaptation of the Evidence Pyramid Diagram developed by the Medical Research Library of Brooklyn, SUNY Downstate Medical Center.

# Nutrition Research Pyramid



# Current Observational Research

- NHANES analysis of OJ and association with body weight and diet quality in adults and children (University of Washington)
- NHANES analysis of trends over time relating to OJ and nutrient adequacy in adults and children (Nutrition Impact, LLC)
- Longitudinal analysis of OJ as related to weight, health, activity and diet quality in children (University of Connecticut)
- Systematic review of hesperidin as delivered by OJ and various health benefits (University of Florida)
- Systematic review of OJ and oxidative stress/inflammation (George Mason University, Tufts)



**Nutrient  
Whole Food  
Diet**



# Nutrient-Dense 100% Orange Juice

## Excellent Source

Vitamin C  
Calcium (fortified)

## Good Source

Potassium  
Folate  
Thiamin  
Vitamin D (fortified)

## Lesser Amounts (<10% Daily Value)

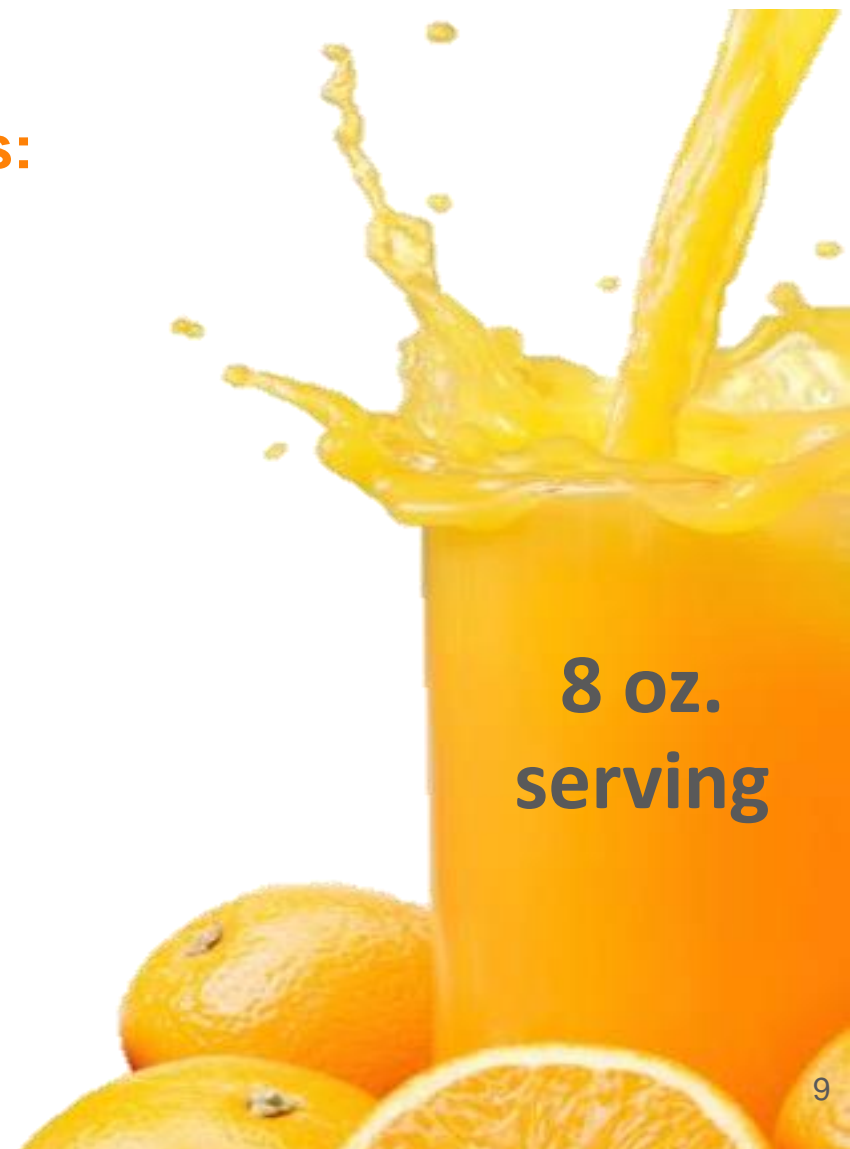
Magnesium  
Vitamin B6  
Riboflavin  
Niacin  
Vitamin A

## Phytonutrients:

Flavonoids  
Hesperidin  
Naringin

## Carotenoids:

Beta-carotene  
Alpha-carotene  
Beta-cryptoxanthin  
Lutein  
Zeaxanthin



**8 oz.  
serving**

# Research Supporting 100% OJ



**Heart Health**



**No Association  
With Weight Gain**



**Brain Health**



**Hydration and  
Rehydration  
after Workouts**



**Blood Sugar**

# Research Supporting OJ in the Diet



- OJ drinkers have higher diet quality and increased levels of key nutrients
- Results of additional studies with the newer NHANES datasets in this area are coming soon that support past findings
- Promote overall healthy food choices and OJ has a place in the diet



**Vitamin C  
OJ  
Immunity**

# Vitamin C's Role in the Body

- **Antioxidant**
- **Helps Form**
  - Neurotransmitters
  - Hormones
- **Conversion of food to energy**
- **Immune System**
  - Collagen formation (skin is first line of immunity defense)
  - Promotes production and function of various types of immune cells
  - Assists with specific types of white blood cells to enhance their actions



# Vitamin C and Immunity

- Decades of research
- Many studies done with supplements and large doses
- Habitual supplementation prior to illness may reduce the severity or duration of colds
- Doses in studies were 200 to 1000mg+
- Intravenous vitamin C may help in treating infections/viruses



~100mg of Vitamin C

# What about OJ?

- **FDOC-Funded Study (Perche 2014)**
  - Specifically examined OJ effects on various immune markers
  - 24 Well-nourished and healthy men, average age 56 years
  - 500 mL (about 16 ounces) OJ/day, placebo, or placebo + hesperidin capsule for 4 weeks
  - Subjects' immune systems were not activated or challenged in this study
  - Found **NO EFFECTS on immune cells and activity** in any group
- **Brazil Study (Dourado 2015)**
  - 21 Normal and 25 overweight otherwise healthy men and women, age 23-59 years
  - 750 mL (about 24 ounces) OJ/day for 8 weeks
  - Subjects' immune systems were not activated or challenged in this study
  - Increase in Interleukin-12 (IL-12) which could **potentially stimulate immune response**

Perche O, et al. *Clinical Nutrition*. 2014;33:130-135.

Dourado GK, Cesar TB. *Food Nutr Res*. 2015;59:28147.



# Health Claims and Research Evidence

- No FDA approved health claim for vitamin C and immunity
- European Food Safety Authority (EFSA) officially recognized that vitamin C contributes to the normal function of the immune system in the general population (approved health claim)
- Research Evidence
  - Research evidence high for vitamin C and immunity
  - Research evidence very low for OJ and immunity
  - Our messaging on immunity must reflect the current science



# Science We Leverage

- Vitamin C's importance in supporting immune function
- Vitamin C is water-soluble, and we need it on a daily basis
- Immune system is complex and relies on optimal amounts of many nutrients that play complementary roles
- Hydration is important during illness and recovery
- Consumers identify OJ as a key source of vitamin C

# KEY MESSAGE: Drink 100% orange juice throughout the year to continually support your immune system

 **Florida Orange Juice**  
Sponsored · 🌐


Help your immune system stay strong all year long by powering it with the essential nutrients found in Florida Orange Juice.



**Your ultimate  
Vitamin C ally.**


FLORIDACITRUS.ORG  
Vitamin C in Every Glass 🍊


[Shop Now](#)



**Give your  
body support  
all year long.**

[Shop now](#)





# Key Message: 100% orange juice contains a unique package of nutrients to help support your immune system



The advertisement is a Facebook post from Florida Orange Juice. It features a photograph of a young child in a hospital bed, smiling and holding a glass of orange juice. The text is overlaid on the image and includes a headline, a sub-headline, a website, and a call to action button.

 **Florida Orange Juice**  
Sponsored · 


Support your immune system by powering it with nutrients like vitamin C, folate, and thiamin found in 100% Orange Juice.

**Recovery starts with the right nutrients.**

FLORIDACITRUS.ORG  
**Power Up With Nutrients** 🍊

[Shop Now](#)


# Key Message: 100% orange juice can help you stay hydrated throughout cold and flu season




Hydration is key to recovery.

[Shop now](#)

amazon



Florida Orange Juice™



Save Like Send ...

Restore your body's nutrients.

Saved from Florida Orange Juice Visit

Get more Pins from Florida Orange... Follow

The image features a stylized graphic of a glass on the left, tilted to pour a thick, vibrant orange liquid into a larger, wider container on the right. The liquid is depicted as a thick, flowing stream that curves from the glass into the larger container. The background is a light, neutral color, and the overall aesthetic is clean and modern. The text 'Moving Forward' is centered in the middle of the frame, overlaid on the white space between the two containers.

**Moving  
Forward**

# SRD is working for you

- Daily literature searches
- Monitoring media coverage of science
- Ongoing project updates
- Press releases: global marketing
- Juice Products Association
- International Life Sciences Institute, North America
- Communicating with Health professionals
- Engaged with policy-making

# Recent publications

- **University of Kansas exercise study (Kelly 2020)**
  - FDOC funded
  - Randomized controlled trial in 26 young adults
  - Compared palatability, hydration, thirst, and GI effects of 100% OJ, sports drink, and water post-exercise (cycling)
  - OJ was just as effective as other beverages and a viable option to water or a sports drink for post-exercise rehydration
- **United Kingdom Biobank cohort study (Anderson 2020)**
  - Almost 200,000 participants, age 40-69 at baseline
  - 100% fruit/vegetable juice consumers did not have higher body mass index in spite of higher intakes of energy, sugar, or fat
  - Higher intake of 100% fruit/vegetable juice associated with lower risk for all-cause mortality

Kelly MR et al. *J Nutr Health Sci.* 2020;7(1): 101.

Anderson JJ et al. *BMC Med.* 2020;18(1):97.



# Recent publications

- **Dutch EPIC cohort study (Scheffers 2020)**

- Over 36,000 adult participants, age 20-69 at baseline
- Consumption of 100% fruit juice not associated with risk for type 2 diabetes after ~14 years of follow up
- Fruit juice drinkers had healthier dietary habits

- **Canadian schoolchildren (Eny 2020)**

- 1778 children age 3-6 years
- 100% fruit juice not associated with negative impacts on blood glucose or cardiometabolic risk score (a score consisting of systolic blood pressure, waist circumference, high-density lipoprotein cholesterol, triglycerides, and glucose)

Scheffers FR et al. *J Nutr.* 2020 Jan 14. pii: nxz340.

Eny KM et al. *Prev Med Rep.* 2020;17:101054



# Criteria for projects moving forward

- **Produce useful data/information to be leveraged by FDOC's Global Marketing Department in order to:**
  - Support nutritional and health benefits associated with OJ consumption
  - Counteract negative or inaccurate media coverage
  - Identify consumer/health trends
- **Support research studies to:**
  - Review and strengthen existing research
  - Fill gaps in existing research and literature
  - Support and advise nutrition policy as related to OJ

# Summary

- Nutrition research is evolving, varied and not without challenges
- OJ provides nutrients to promote a positive role for OJ in supporting immunity and other benefits
- FDOC depends on research to develop and support strategies that encourage consumption and promote the positive aspects of drinking OJ
- FDOC must rely on strong science to remain a credible and trusted resource and to keep the conversation around OJ current, relevant, and engaging

**Thank You**

