



# GETTING THE SKINNY ON ABC SKIN HEALTH RESEARCH

Moderator: Christine Gemperle  
(Gemperle Orchards)

Speakers: Raja Sivamani (UC Davis),  
Zhaoping Li (UCLA),  
LuAnn Williams (Innova Market Insights)





# Get the 'Skin'ny on ABC Skin Research

Moderator:

Christine Gemperle,  
Gemperle Orchards  
Member – ABC Board of Directors

Speakers:

Raja Sivamani, MD MS AP  
Dermatology,  
University of California, Davis

Zhaoping Li, MD, PhD  
Internal Medicine,  
University of California, Los Angeles

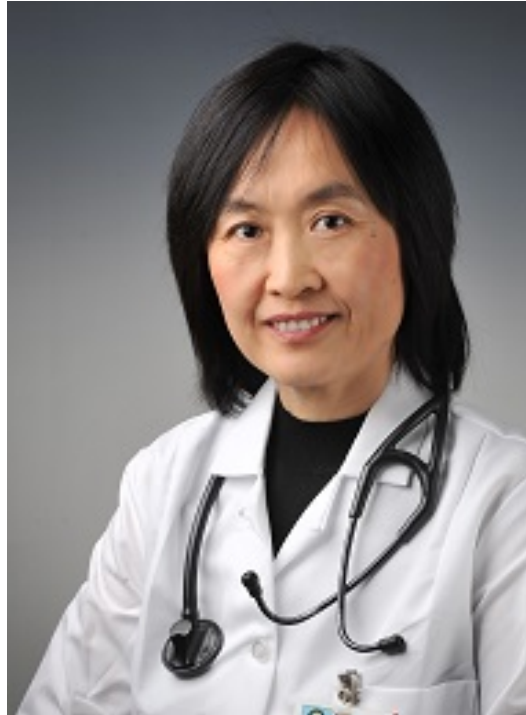
Lu Ann Williams  
Director of Innovation  
Innova Market Insights

# Meet our esteemed guests

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**Dr. Raja Sivamani**  
Dermatology, UC Davis



**Dr. Zhaoping Li**  
Internal Medicine, UCLA



**Lu Ann Williams**  
Director of Innovation  
Innova Market Insights

# Key Research Area: Skin Health



# Influence of Almond Ingestion on the Skin

**Raja Sivamani, MD MS AP**

Zen Dermatology

Pacific Skin Institute

University of California Davis, Department of Dermatology

California State University – Sacramento, Department of Biological Science

California Northstate University, College of Medicine

**Why Almonds?**

Based on a one-ounce portion	ALMOND
Calories	163
Protein (g)	<b>6.0</b>
Total Fat (g)	14.0
Saturated Fat (g)	1.1
Polyunsaturated Fat (g)	3.4
Monounsaturated Fat (g)	8.8
Carbohydrates (g)	6.1
Dietary Fiber (g)	<b>3.5</b>
Potassium (mg)	200
Magnesium (mg)	76
Zinc (mg)	0.9
Copper (mg)	0.3
Vitamin B6 (mg)	0
Folate (mgc)	14
Riboflavin (mg)	<b>0.3</b>
Niacin (mg)	<b>1.0</b>
alpha-tocopherol (mg)	<b>7.4</b>
Calcium (mg)	<b>75</b>
Iron (mg)	1.1

# Pilot Study

RESEARCH ARTICLE

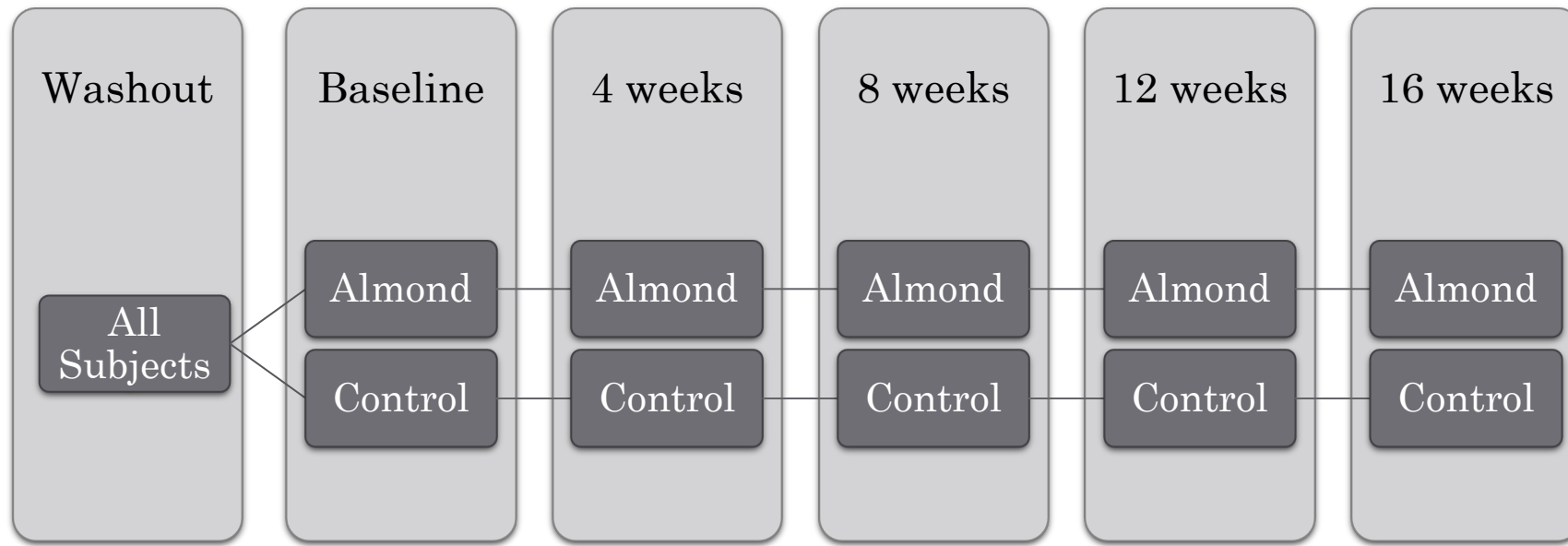
WILEY

## Prospective randomized controlled pilot study on the effects of almond consumption on skin lipids and wrinkles

Negar Foolad<sup>1</sup> | Alexandra R. Vaughn<sup>2,3</sup>  | Iryna Rybak<sup>2</sup> | Waqas A. Burney<sup>2</sup> |  
Gwen M. Chodur<sup>4</sup>  | John W. Newman<sup>4,5</sup> | Francene M. Steinberg<sup>4</sup> | Raja K. Sivamani<sup>2,6,7</sup> 







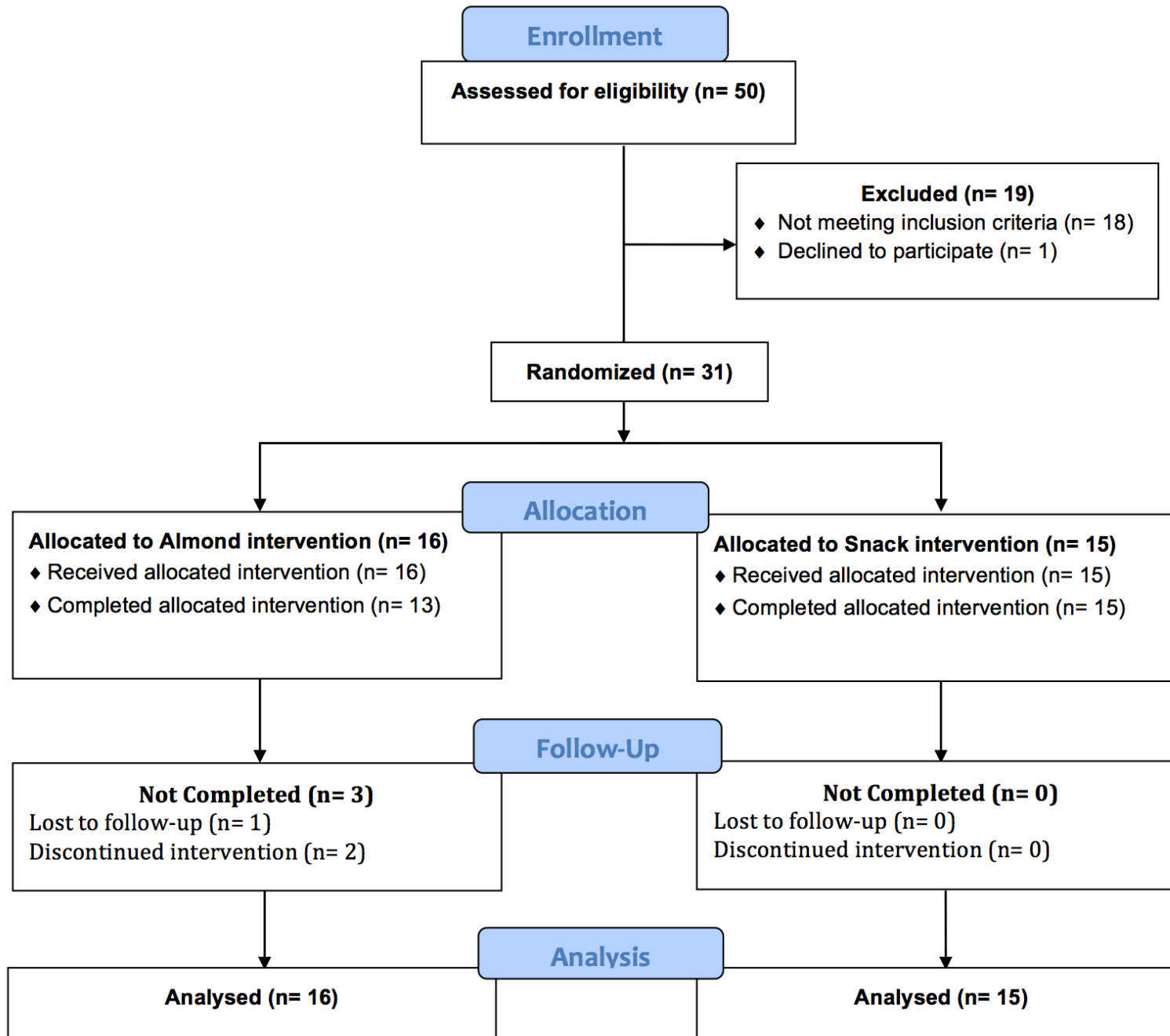
### Almond Group

Raw almonds supplying 20% of total daily energy  
(~handful of almonds)

### Control

Nut free calorie matched snacks  
(a cereal bar, a small granola bar, and pretzels)

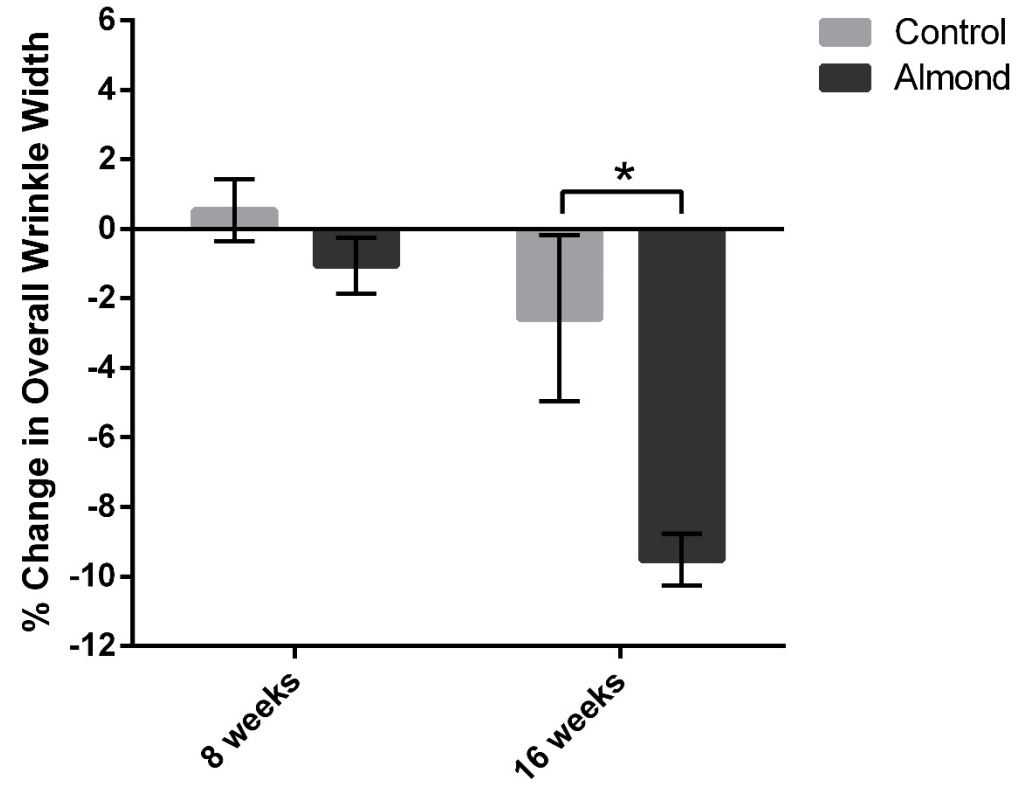
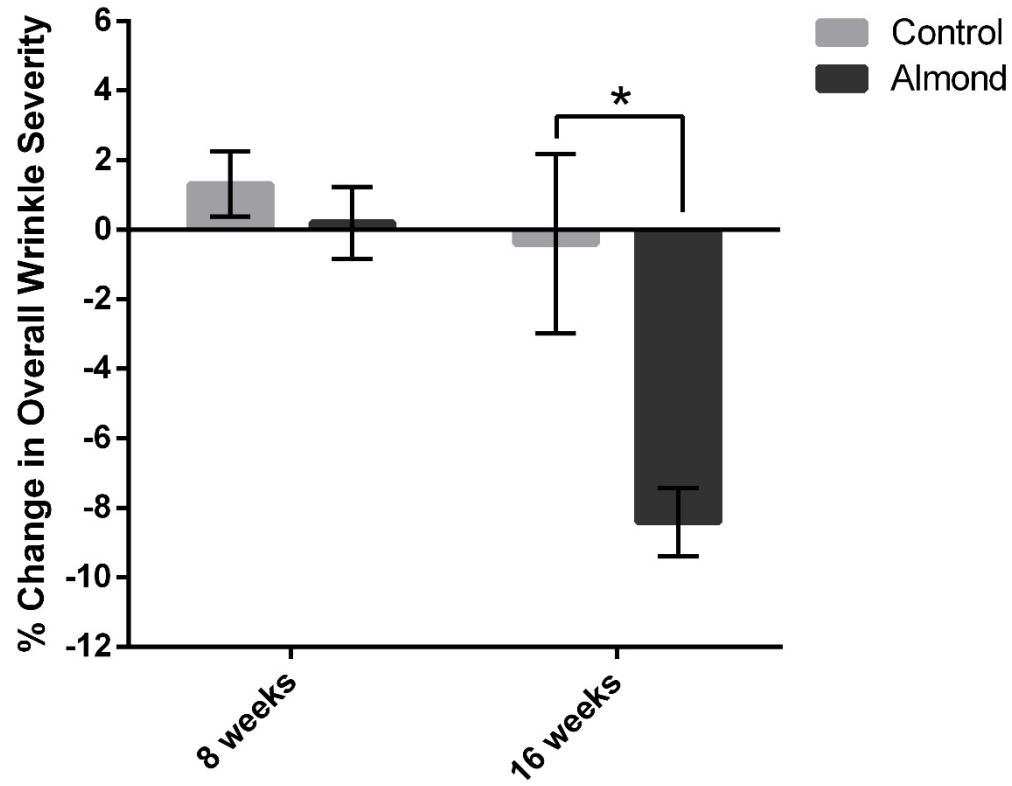
ClinicalTrials.gov: NCT02954315



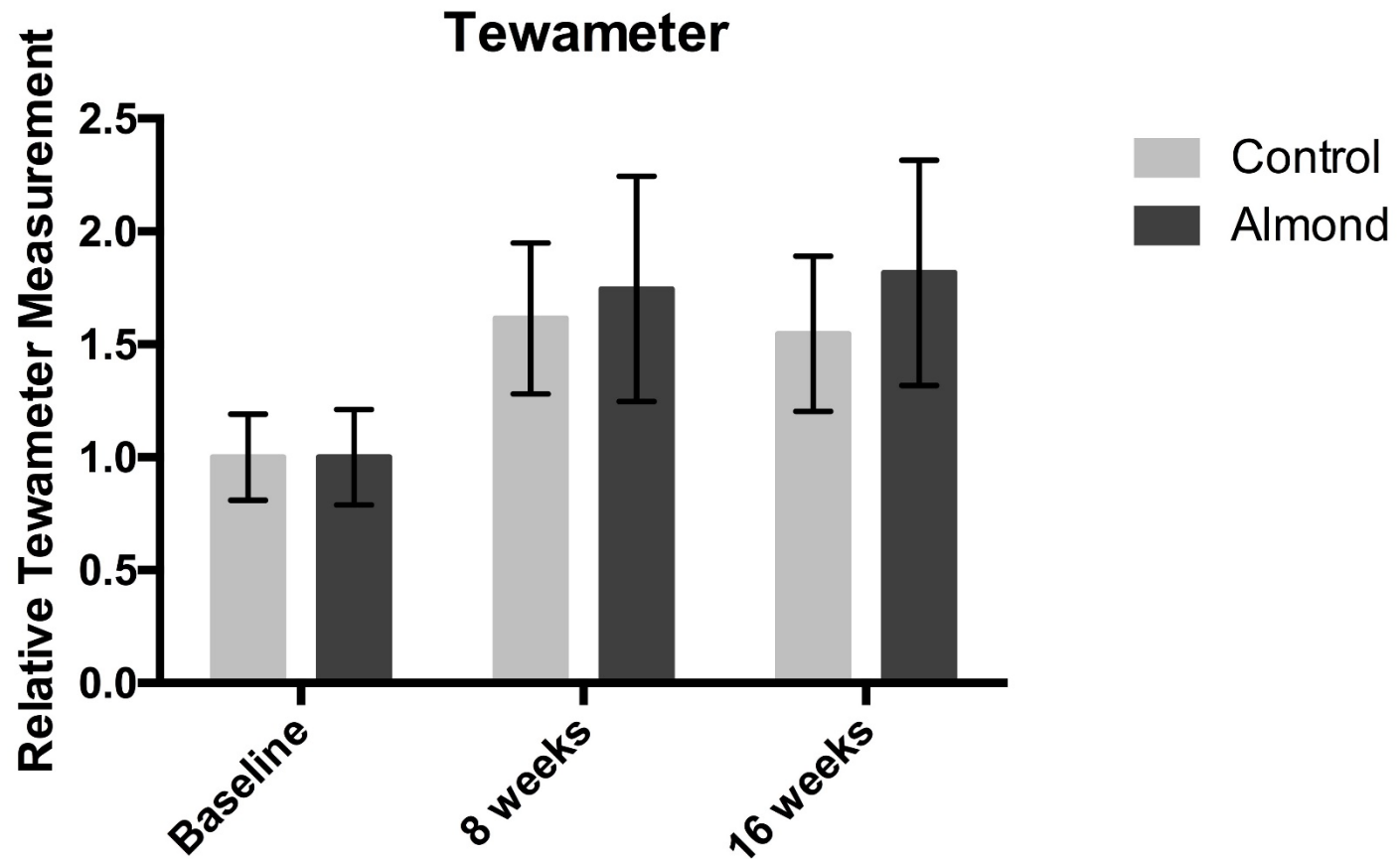
# Demographics

Demographic Factor	Almond group (n=16)	Control Group (n=15)
Age, mean±SD	63.63 ± 7.09	58.93 ± 6.10
Sex, Female	16	15
Body Mass Index (kg/m <sup>2</sup> ), mean±SD	30.7 ± 7.31	29.7 ± 7.66

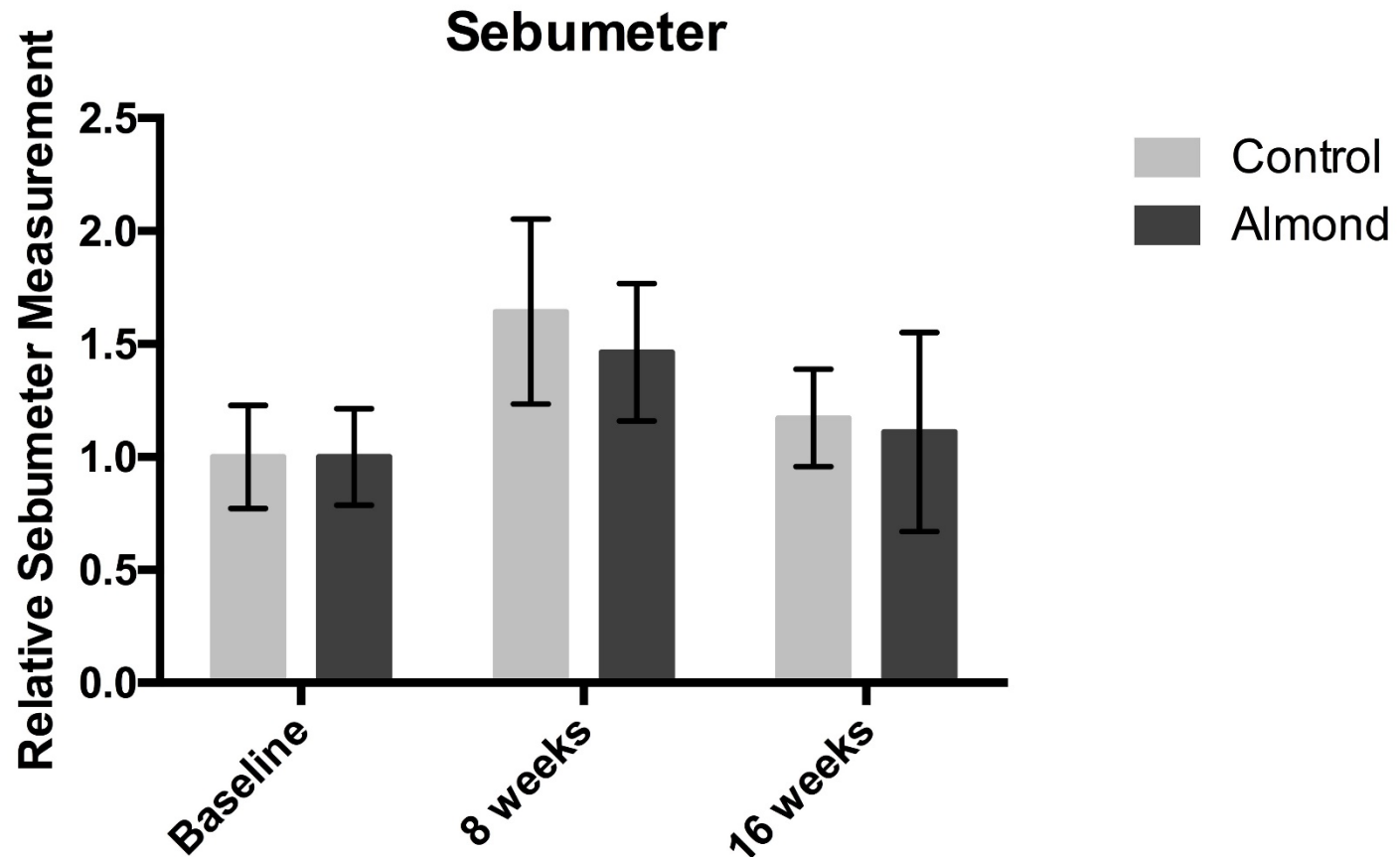
# Results: Wrinkles



# Results: Skin Barrier – Transepidermal Water Loss



# Results: Sebum Excretion Rate





**Baseline**



**16 weeks**

No Side Effects



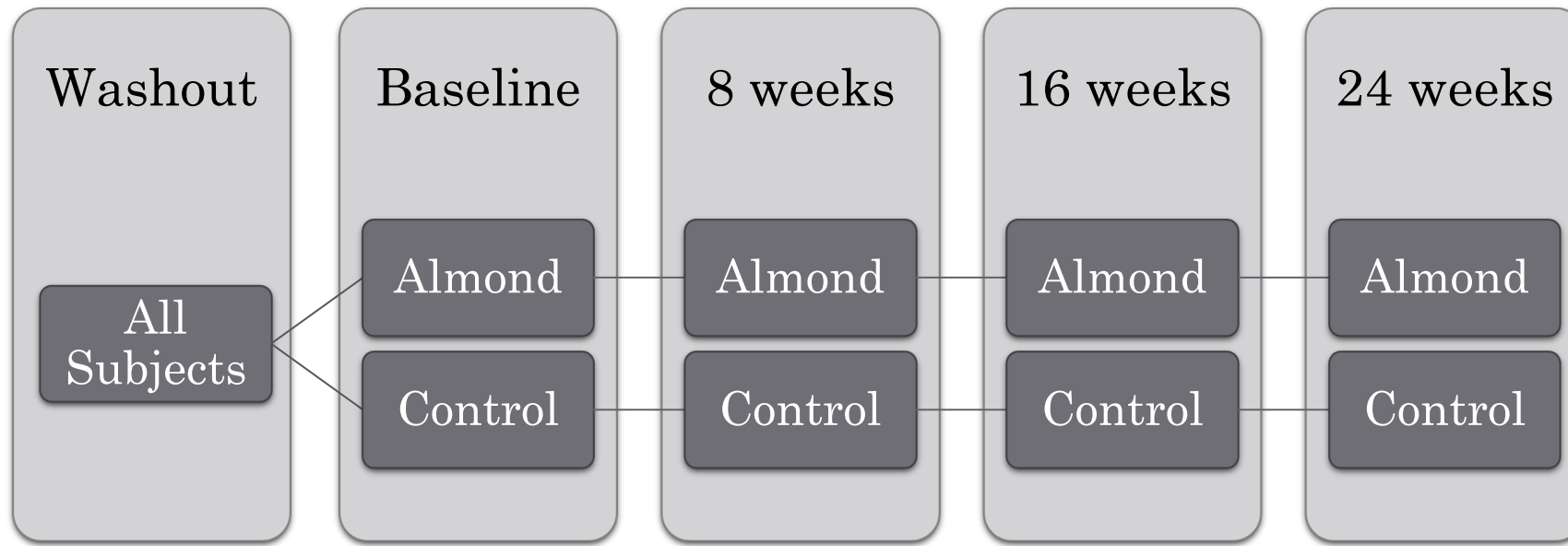
# Overall Results

- Wrinkles were improved in the almond supplementation group
- Not due to change in sebum production or change in skin barrier function

# Follow Up Expanded Study



- Expanded study population
- Longer duration for study



**Almond Group (n=27)**

Raw almonds supplying 20% of total daily energy  
(~handful of almonds)

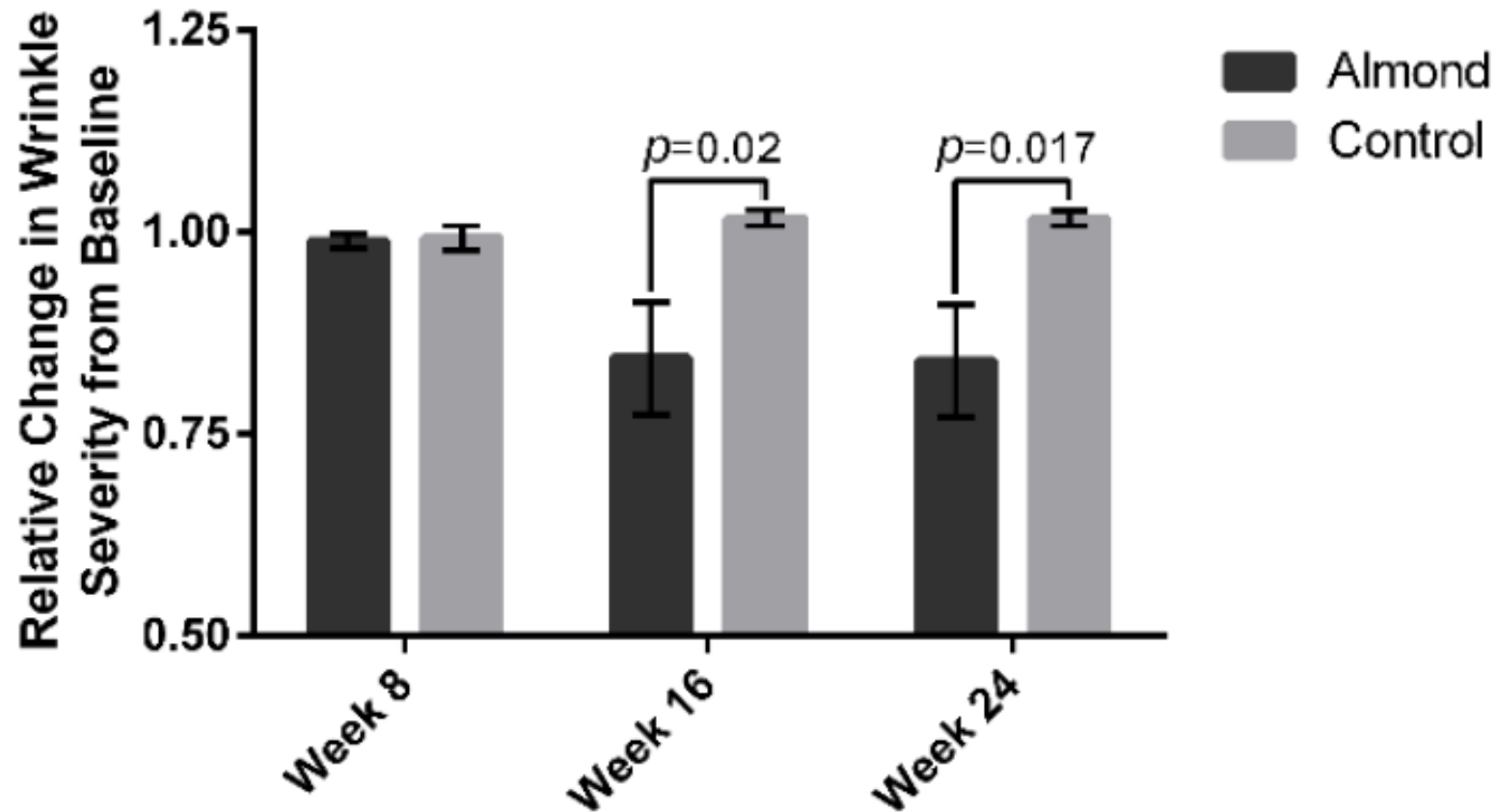
**Control (n=29)**

Nut free calorie matched snacks

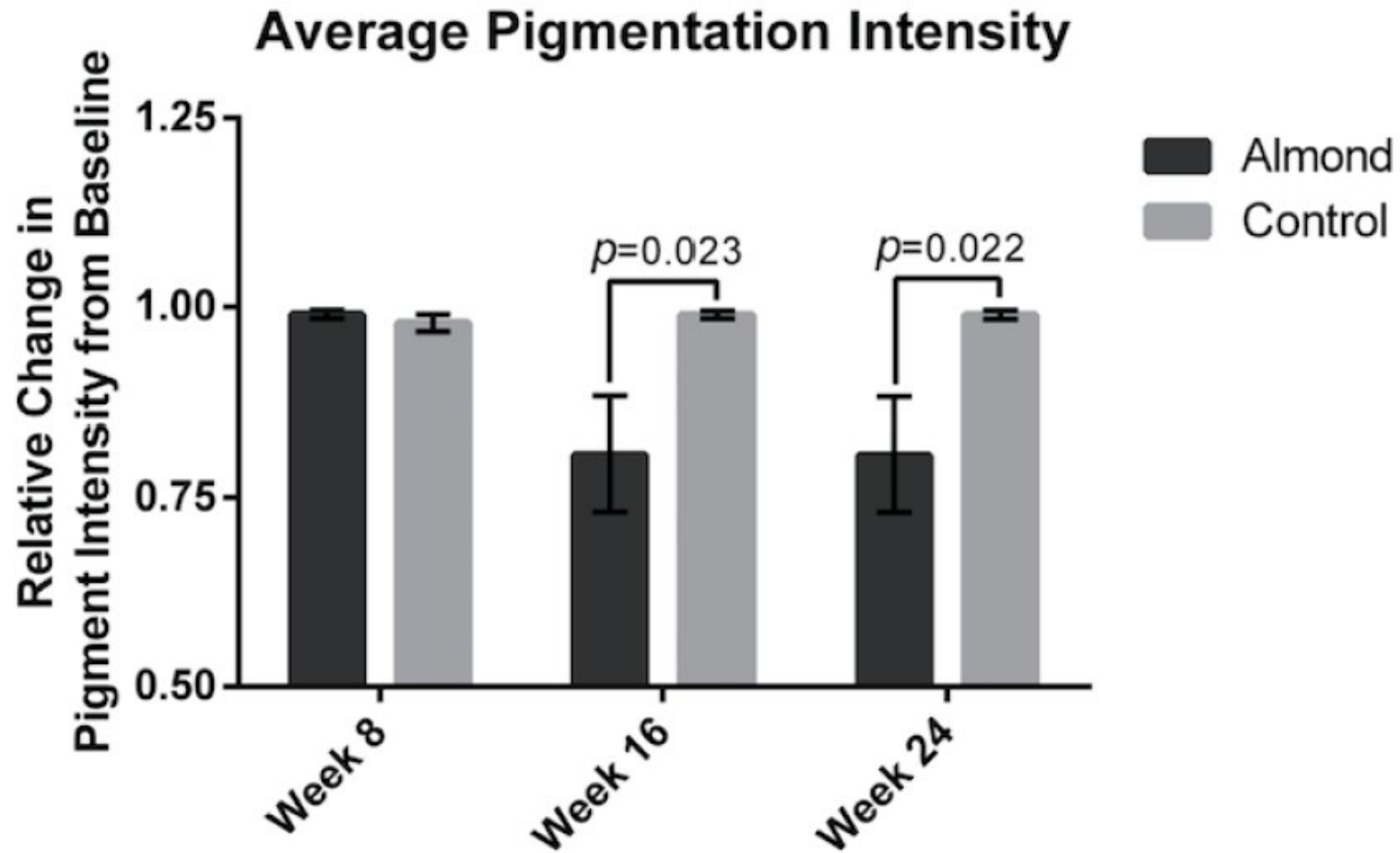
ClinicalTrials.gov: NCT03729700

# Wrinkles

Average Wrinkle Severity

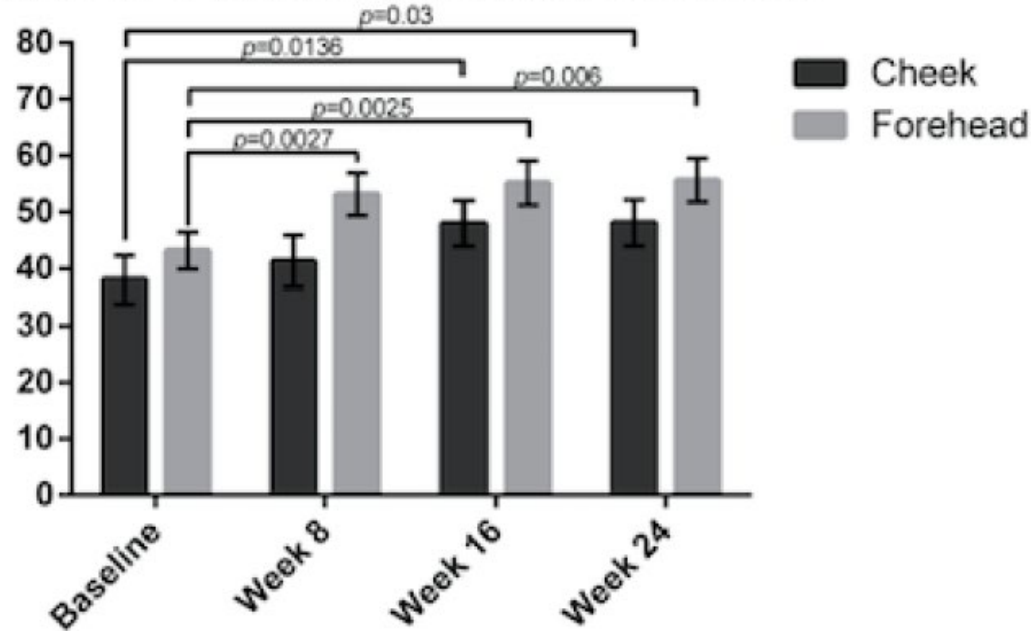


# Pigment

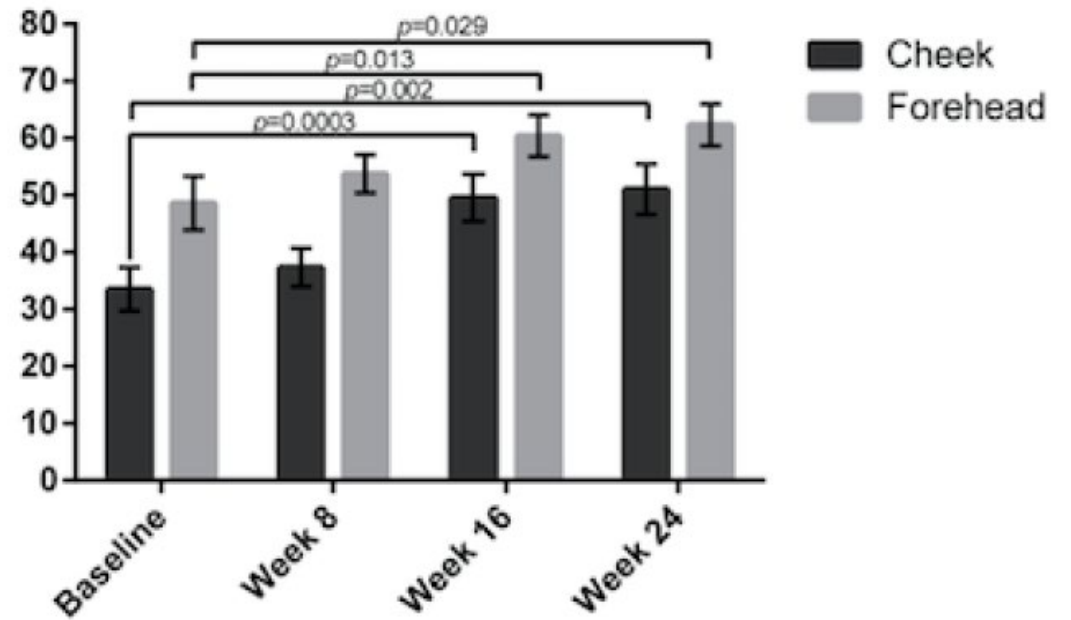


# Skin Hydration

**A Hydration and Almond Supplementation**

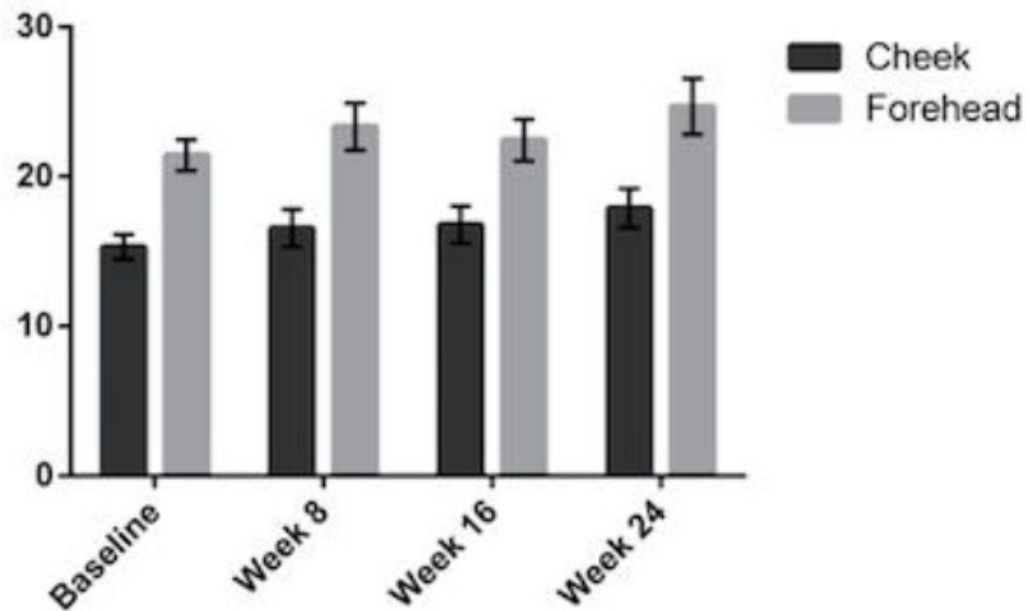


**B Hydration and Control Supplementation**

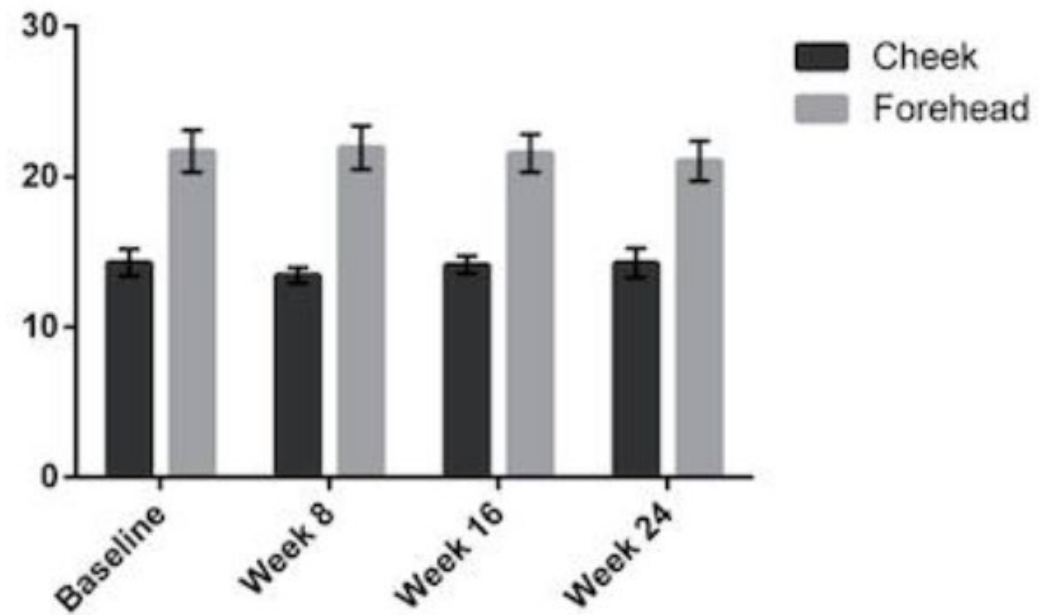


# Transepidermal Water Loss

**A** TEWL and Almond Supplementation

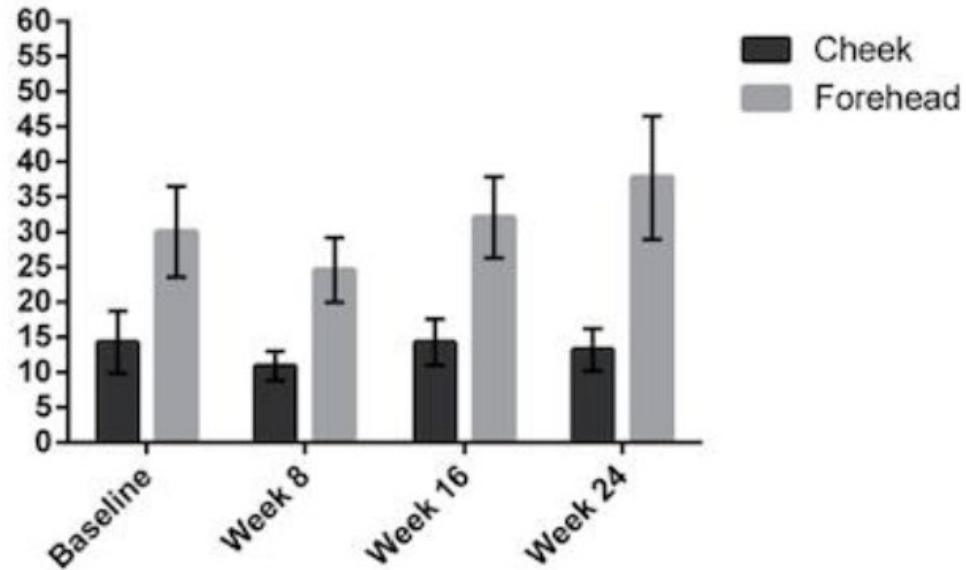


**B** TEWL and Control Supplementation

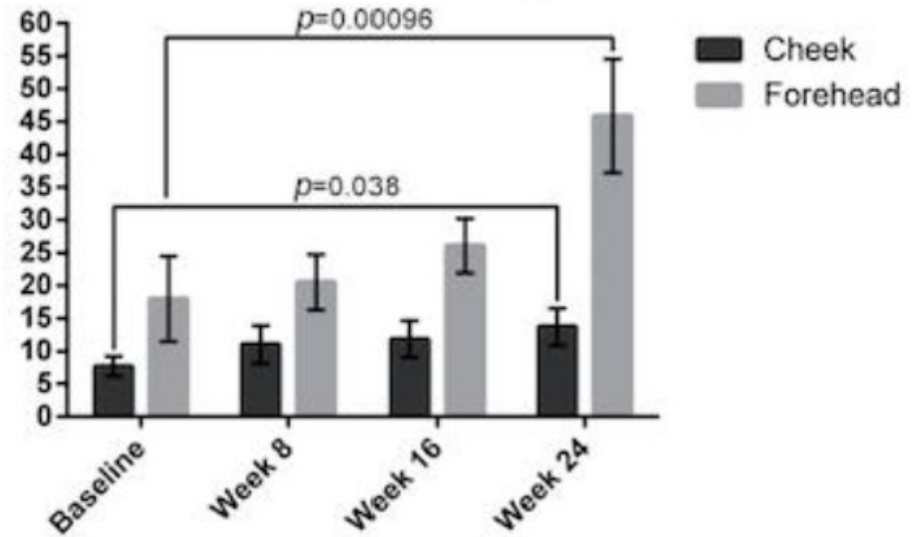


# Sebumeter

**A** Sebum Excretion and Almond Supplementation



**B** Sebum Excretion and Control Supplementation





# Overall Conclusions: Follow-Up Study

- Almond supplementation **significantly reduce** the appearance of wrinkle severity
- Almond supplementation **significantly reduced** the appearance of pigment intensity
- Control supplementation increased sebum excretion rate on the forehead but this was not noted in the almond supplementation group

# Onoing Studies

- Almond oil and wrinkles and pigmentation
- Almond ingestion and acne

# Almonds and Glycemic Index

- Almonds may reduce glucose spikes

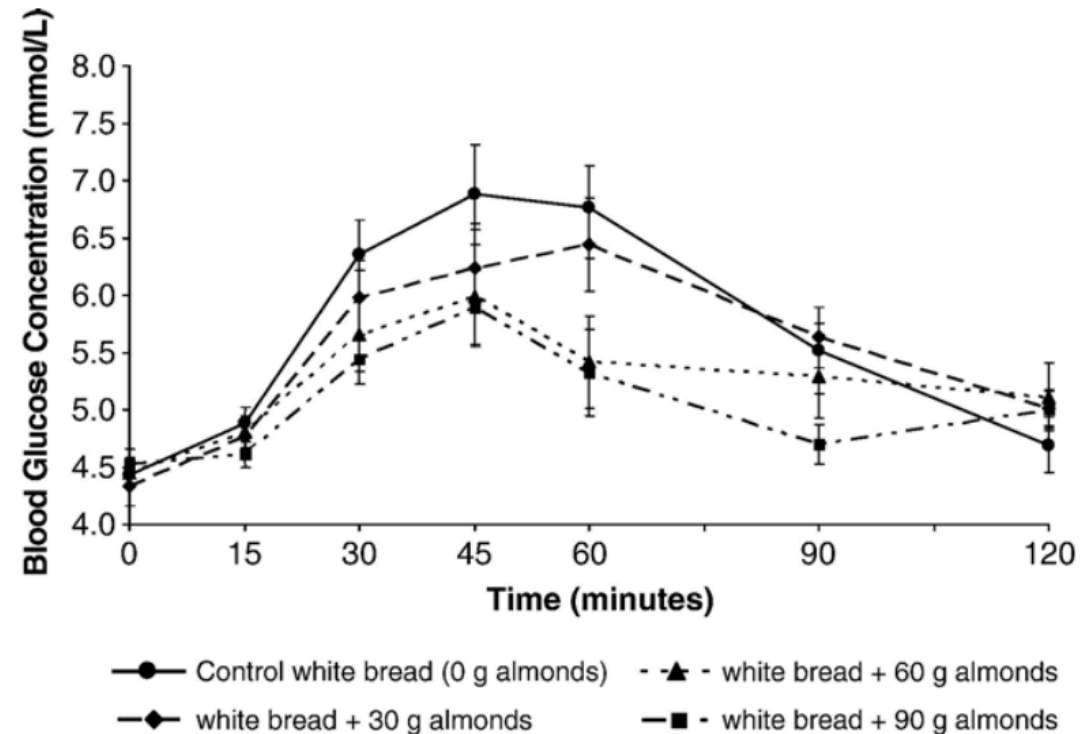


Fig. 1. Two-hour blood glucose response curves with SE bars on each time point for the 3 almond meals and the control meal. The control meal had the highest glucose response, followed by the 30-g, the 60-g, and then the 90-g almond meals.

## UC Davis Dermatology

Iryna Rybak

Adrienne Pan

Anastasia Shakhbazova

## Integrative Skin Science and Research

Jessica Maloh

Kayla Bensen

Shivani Thacker

Vivien Fam RD PhD



National Institutes  
of Health  
SBIR/STTR



# Health Benefits of Almond: From Research to Consumers

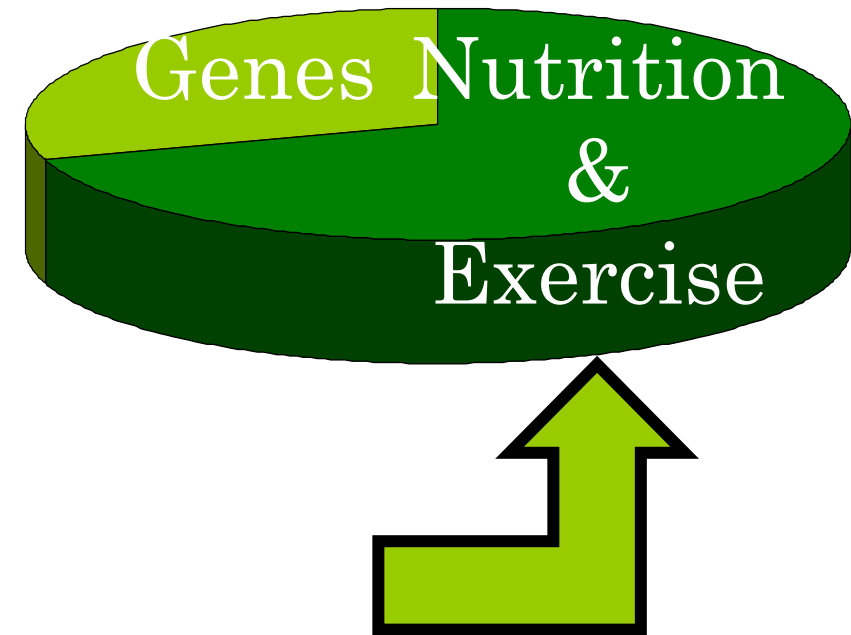
Zhaoping Li, M.D., Ph.D.  
Professor of Medicine



# You Control Your Health and Aging

Only 30% of how you age is determined by your genes

**The other 70% is in your hands**



# Aging and the Skin

## Photodamage

- appearance of wrinkles
- pigmented lesions
- actinic keratoses
- patchy loss of color



# Stochastic theory

## Environmental factors

- UV radiation
- smoking
- Pollution
- Harsh weather
- Stress
- Diet





# Health Skin Aging

- Vitamins A,C,D,E
- Antioxidants



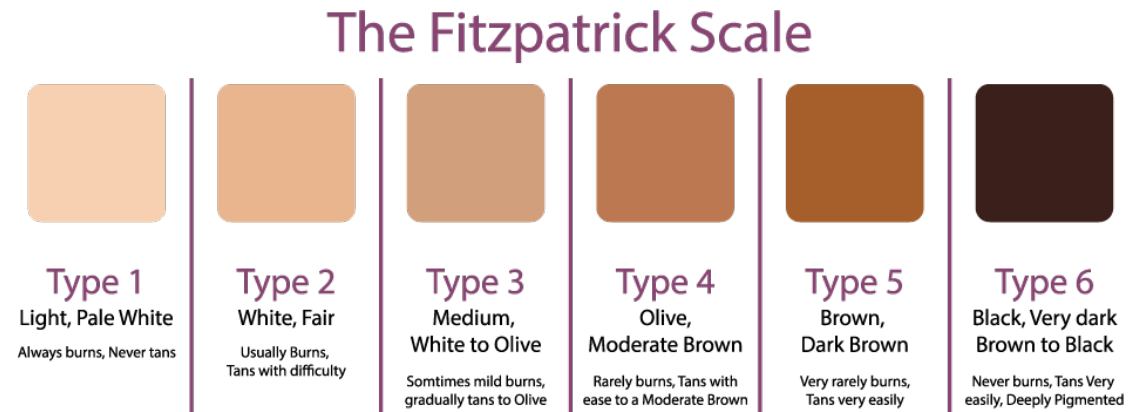
# Health Skin Aging

- Healthy Lifestyle
- High quality, diverse diet
- Vitamins A,C,D,E
- Antioxidants

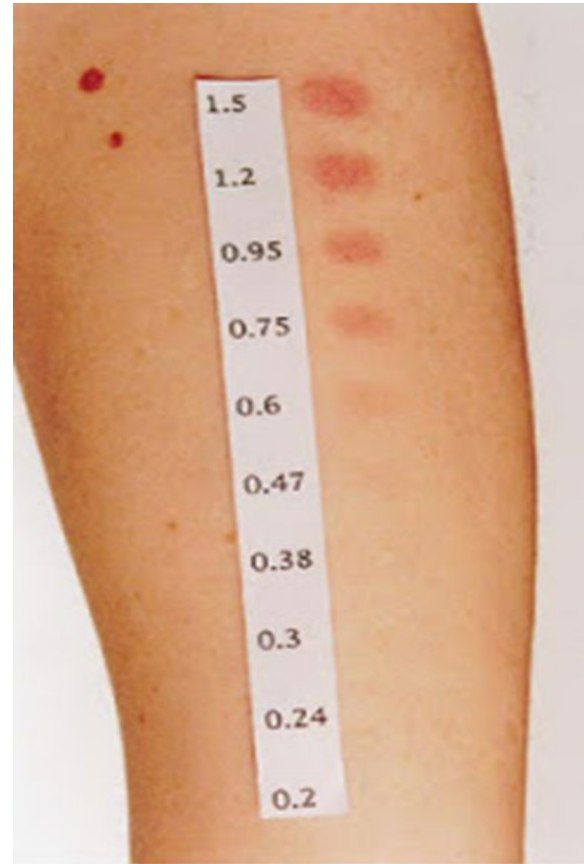


# Almond on the Resistance to UVB-induced Damage

- Design: randomized, placebo controlled
- Study population:
  - Asian women
  - 18-45 years old
  - Fitzpatrick skin type II-IV
- 1.5 oz of almonds or 1.8 oz of pretzels
- Duration: 12 weeks



# UV-induced erythema

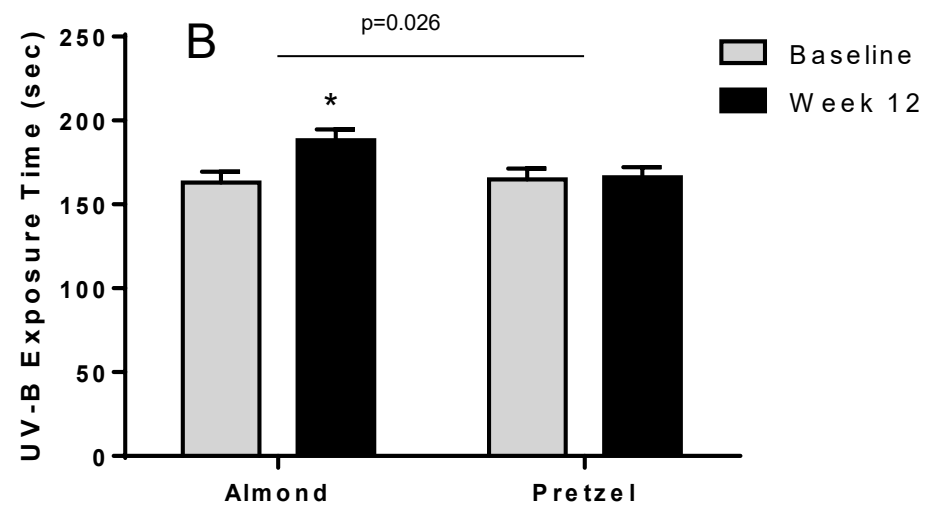
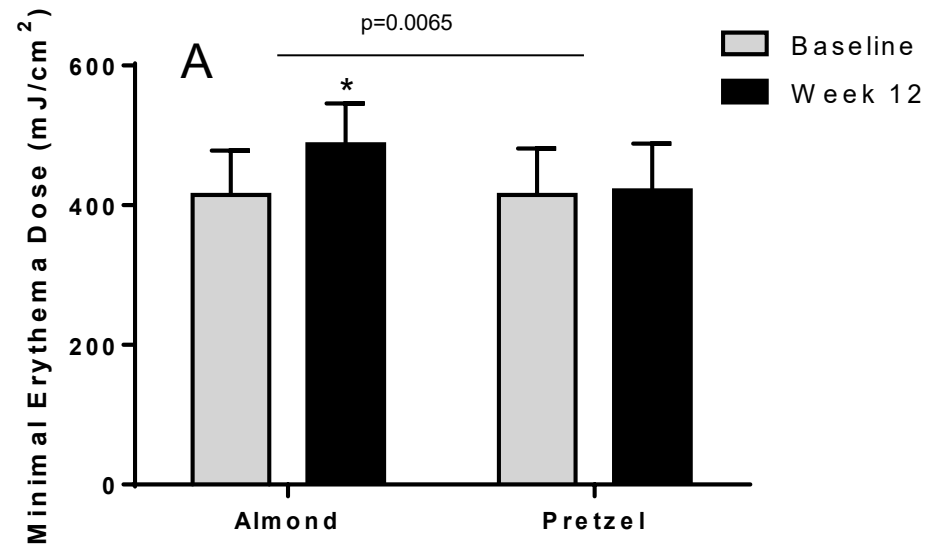


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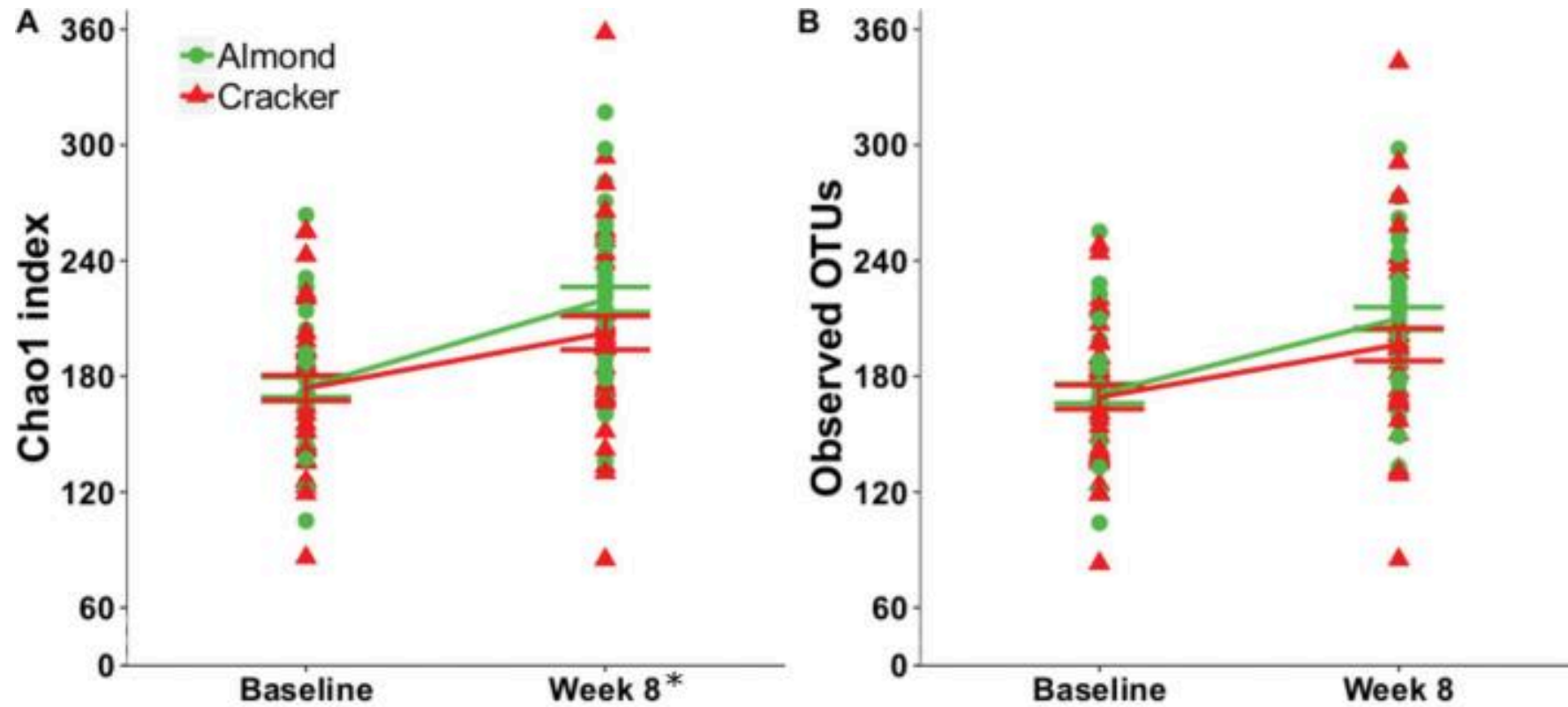
# Demographics of study participants

	<b>Almond (n=13)</b>	<b>Control (n=16)</b>
<b>Age (years)</b>	27.5 ± 6.3	28.4 ± 8.7
<b>Height (inches)</b>	63.2 ± 2.5	63.1 ± 2.0
<b>Weight (lbs)</b>	130.2 ± 16.5	125.5 ± 16.5
<b>BMI</b>	22.9 ± 2.4	22.1 ± 2.42
<b>Ethnicity</b>		
<b>Cambodian</b>	2 (15)	0 (0)
<b>Chinese</b>	4 (31)	6 (38)
<b>Filipino</b>	2 (15)	1 (6)
<b>Korean</b>	2 (15)	5 (31)
<b>Taiwanese</b>	0 (0)	1 (6)
<b>Vietnamese</b>	1 (8)	1(6)
<b>Bi-racial</b>	2 (15)	2 (13)
<b>Skin Type</b>		
<b>III</b>	4 (31)	8 (50)
<b>IV</b>	9 (69)	8 (50)

# Almond on the Resistance to UVB-induced Erythema



# Almond Increases Microbiome Alpha-Diversity in College Students



Curr Dev Nutr. 2019 Aug; 3(8): nzz079.

Published online 2019 Jul 3. doi: 10.1093/cdn/nzz079

# Summary

- Almond consumption significantly increased the skin resistance to UV irritation
- Almond consumption may lead to enhanced protection from UV photodamage



# Take Home Message

- Skin health is part of healthy aging
- Never too early to take care of your skin and your health
- It is the best to prevent damage than repair damage

**Almond Board**

# **Almond Products: Skin Health Claims**

November 2021

# Evolving trends: the role of personal values in food choices

## TAILORED TO FIT

Personalized nutrition is the spotlight as consumers look for food and beverage that fit their unique lifestyles



2020

EAT PRETTY

“Beauty starts from within” has been given a whole new meaning as the food and beverage market is seeing a growing number of launches that border on the cosmeceutical



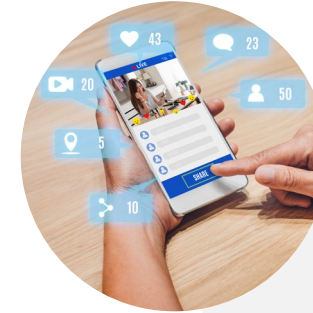
2021



2022

MY FOOD, MY BRAND

Food choices are now signals of entire lifestyles as personal values intertwine with purchasing decisions



**47%**  
of consumers globally

“I care about positive body type awareness on social media”



**17%**  
of consumers globally

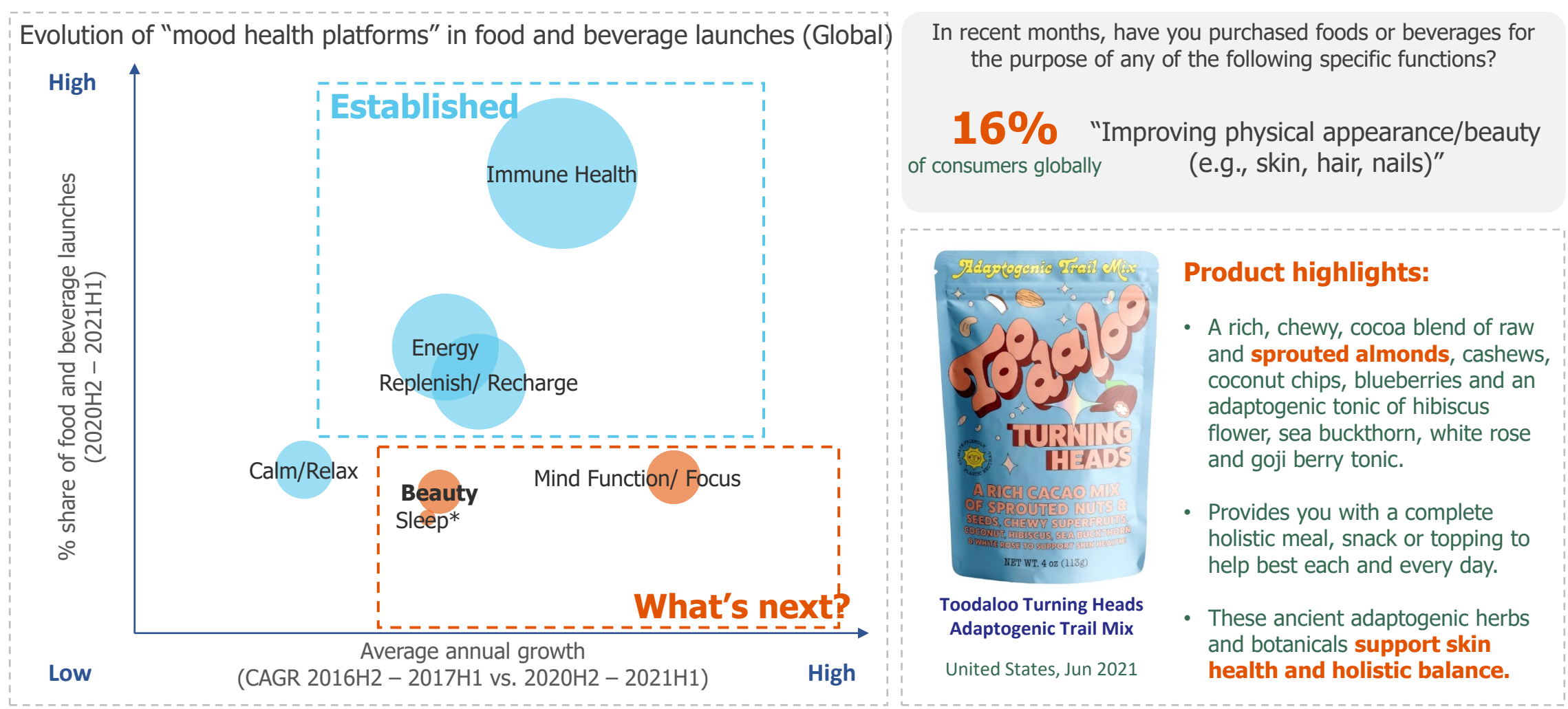
“I am more conscious about my body in terms of physical appearance”

Then

Now

Source: Innova Market Insights  
Innova Trends Survey 2021 (average of UK, US, Canada, Spain, France, Brazil, India, Germany, Mexico, China and Indonesia)

# Exploring the concept of beauty in a holistic health approach



**Source:** Innova Market Insights, Toodalo, Bubble size = # of launches in 2020H2 – 2021H1, \*growing from a small base Innova Trends Survey 2021 (average of UK, US, Canada, Spain, France, Brazil, India, Germany, Mexico, China and Indonesia)

# Consumer demand for beauty-boosting products is driving innovation

  
**1 in 2**  
consumers globally

"When it comes to my beauty and skin health, **I prefer getting vitamins and minerals from natural foods** over taking supplements"

**+32%**  
average annual growth in food and beverages tracked with **beauty claims\*** and **almonds**  
(Global, CAGR 2016H2 – 2017H1 to 2020H2 – 2021H1)

"Original **soymilk collagen nuts** with cashews, walnuts, and **almonds**, in a 30g heat sealed plastic packet. Nut daily. Now beauty."



**Nut Now Original Soymilk Collagen Nuts**

Taiwan (China), Apr 2021

"Research shows that these ingredients (**Almond**, Raw Honey, and Dark Chocolate) also benefit the heart, immune system, circulation, digestion, energy levels, **healthy skin** and even reduce cravings helping with weight loss."



**Luv Superfoods Almond Raw Honey Sweetened Dark Chocolate Beegan Bites**

United States, Sep 2021

"It contains good source of good fats like **omega-3** and a number of important **vitamins and minerals**. [...] Almonds are also great for hair, **skin** and dental care."



**Naach Tangy Roasted Almonds**

India, Aug 2021

**Source:** Innova Market Insights, Innova Beauty, Household and Personal Care Survey 2021 (average of UK, US, France, Germany, Italy, Brazil, Australia, China, Japan, and South Korea),

**Note:** \*Beauty claims include ("for beauty" "rejuvenate your skin" "skin rejuvenation" "beauty boosting" "glowing skin" "skin health" "your skin glow" "better skin" "hair" "beautiful skin" "everyday beauty" "health and beauty" "beauty and health" "Glow from the inside") - ("angel hair" "detox" "rejuvenate" "rejuvenating" "oxidative stress" "skin rejuvenation")

# Growth of skin health positioning in products with almond ingredients

What does healthy aging mean to you?

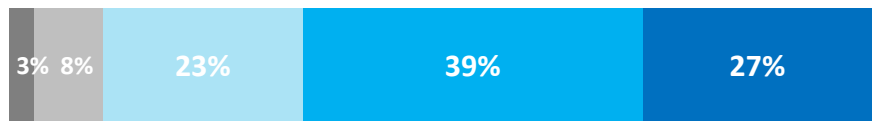


**1 in 5**  
consumers globally  
"Youthful appearance"

How important is healthy aging to you?

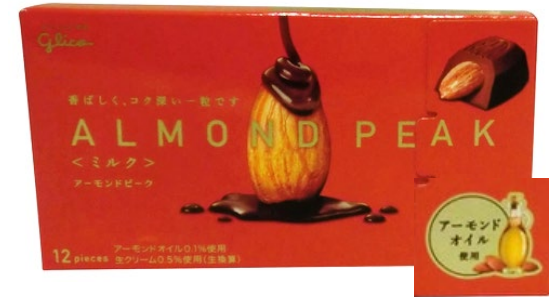
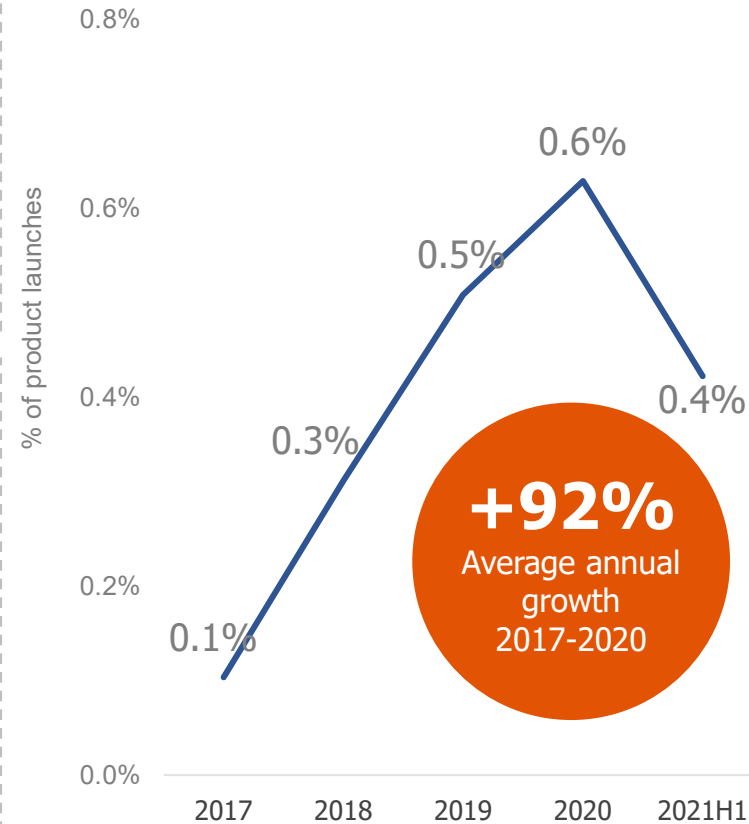
**89%**

of consumers globally



■ Not at all important
■ Slightly important
■ Moderately important  
■ Very important
■ Extremely important

**Figure |** Skin health claim as percentage (%) of food and beverage launches tracked with almonds (Global)



**Glico Almond Peak: Milk Chocolate with Almond Filling**

Japan, Sep 2021

“What is almond oil. **Almond oil is made by squeezing whole almonds. It contains oleic acid and has vitamin E and has been used for beauty and health since ancient times.** Uses 0.1% almond oil. Uses 0.5% fresh cream.”

**Source:** Innova Market Insights, Innova Health & Nutrition survey 2021 (average of UK, US, France, Germany, Brazil, Canada, China, India, Indonesia, Mexico, and Spain), Innova Beauty, Household And Personal Care Survey 2021 (average of UK, US, France, Germany, Italy, Brazil, Australia, China, Japan, and South Korea)

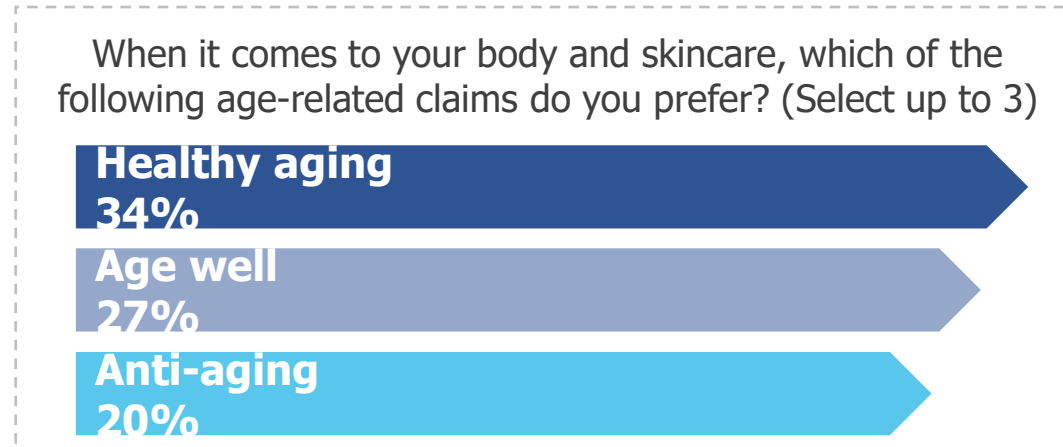
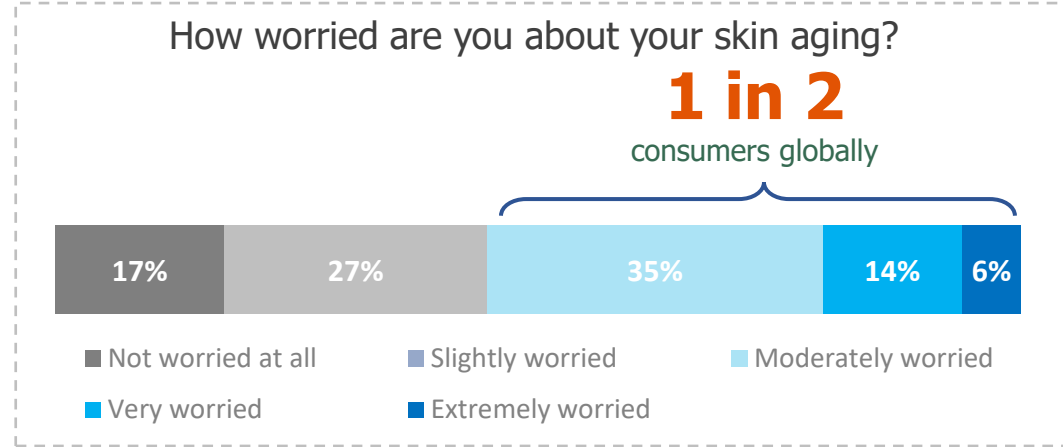
# Food products that border on cosmeceutical skincare products



"This cream **with natural almond oil**, magnolia extract and shea butter. **Moisture care complex, which keeps the skin effectively moisturized for 24 hours.** Suitable for dry skin."

Nivea Natural Almond Oil 24H Moisture Nourishing Day Cream SPF 15 Dry Skin

Finland, Aug 2021



"This granola is a delicious addition to your beauty routine infused **with biotin, pearl and collagen.** Baked to perfection with **toasted almonds** and bourbon vanilla for a crunchy aromatic indulgence."



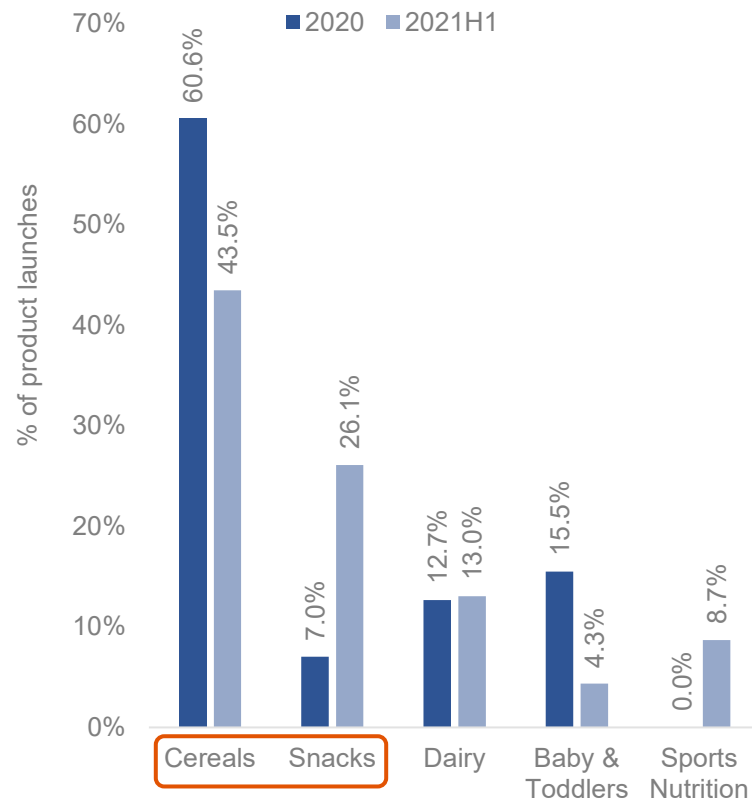
LÜME Cinnamon Almond Biotin Collagen Pearl Glow Granola

United States, Jun 2020

Source: Innova Market Insights  
 Innova Beauty, Household and Personal Care Survey 2021 (average of UK, US, France, Germany, Italy, Brazil, Australia, China, Japan, and South Korea)

# Skin health claims in the almond segment: cereals & snacks are leading

**Figure |** Top categories as percentage (%) of food & beverage launches tracked with a skin health claim and almonds (Global)



**Gr8nola The Original Superfood Granola**

United States, Dec 2020

“Superfood granola with honey-sweetened with a dash of cinnamon and crunchy **whole almonds**. Contains ground flaxseed, an omega-3 and fiber rich superfood that supports digestion, heart and **skin health.**”



**Midiron California Almond**

India, May 2021

“100% vegetarian. 100% natural. No cholesterol. Non-GMO. No gluten. No sodium. High antioxidant. Zero trans fat. Powerful nutrition. Energy booster. **Maintain skin health.**”



**Kresto Mix Orzechow: Mix of Nuts**

Poland, Apr 2021

“**Eating almonds daily supports the daily care of skin, hair, and nails.** All thanks to the high content of vitamin E known as the vitamin of youth.”

Source: Innova Market Insights



# Opportunities for almonds in foods promoting healthy skin (1)

## Leveraging almonds' inherent skin health benefits

...with nutrition claims (nutrient content)

Vitamins & minerals



Vitamin E

Good fats



Omega-3

...with health claims (nutrient benefits)

Maintain skin health

Soften skin

Anti-ageing

Moisturize skin



“Almonds, highly nutritious and rich in healthy fats, antioxidants, vitamins and minerals. Benefits of almonds helps digestion, moisturize skin, protect from heart diseases, eliminate cravings, add shine to dull hair, promote healthy cells, lower cholesterol and lower blood sugar”.

**Somemore Millet Bites Almond Coated with Natural Jaggery**

India, Mar 2021



“Gluten free, suitable for vegans, vegetarians contains source of fiber, high in omega-3, high in selenium, blood cholesterol levels, blood sugar levels, digestion, energy levels, feeling fuller, healthy bones and teeth, healthy heart, healthy skin, immune system, menopausal symptoms, reducing inflammation”

**Linwoods Milled Flaxseed Almonds Brazil Nuts Walnuts And Co Enzyme Q10**

Ireland, Oct 2021

Source: Innova Market Insights, [Linwoods Health Foods](#)

# Opportunities for almonds in foods promoting healthy skin (2)

## Lifestyle and health remain biggest consumer drivers

Personal values intertwine with food choices

Social media influence on perception of health/diets

Consumers want to see their identities reflected in food and beverages

Almond products and applications to promote...

Beauty starts from within

Beauty in a holistic health

Cosmeceuticals: functional food for the skin

"Decadent chocolate and smooth nut butter come together to **deliver the perfect balance of permissibility and indulgence.** Chilled because we have absolutely no preservatives. Ahh, **indulge with the sweet taste of a little self care.**"



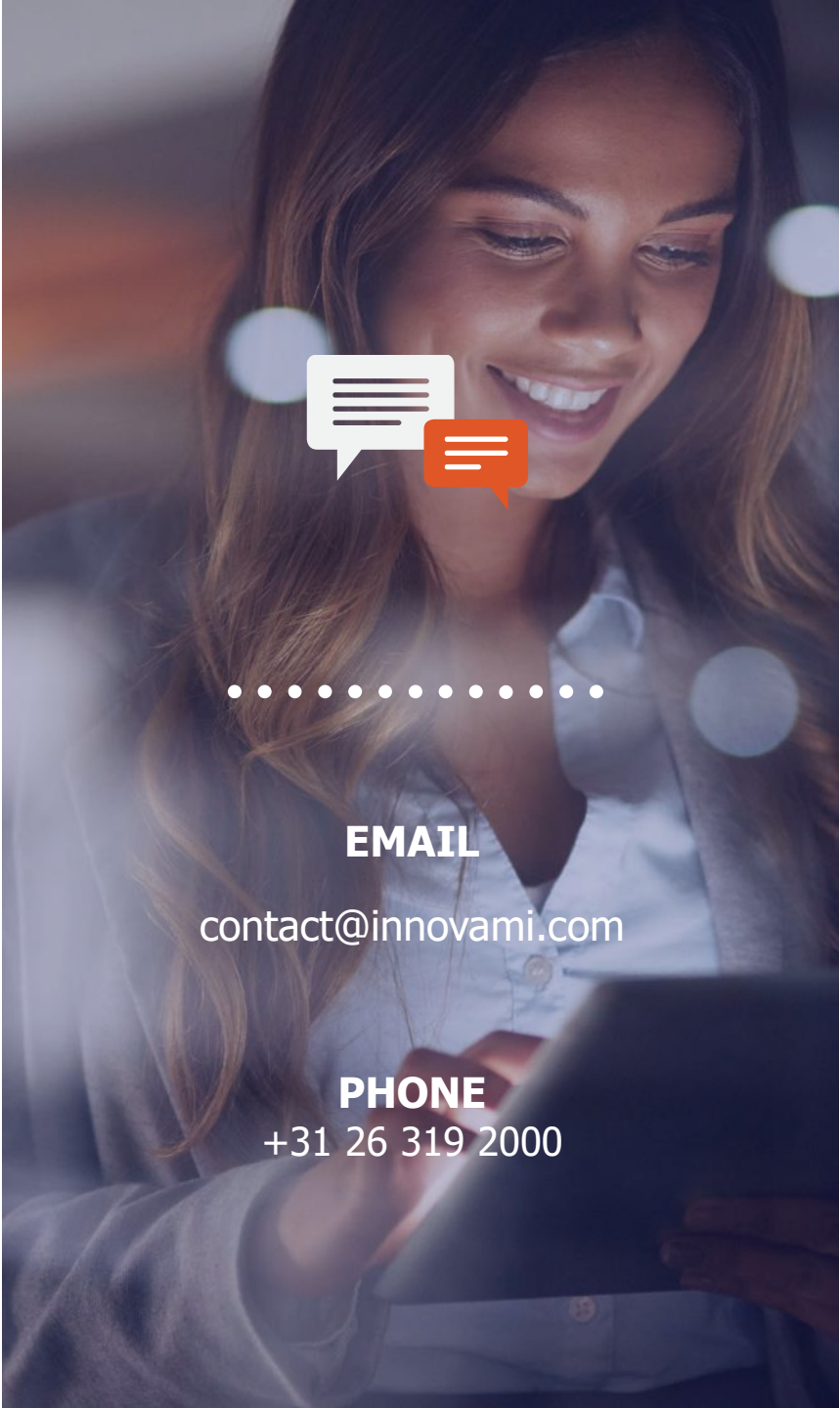
**brownie almond butter covered in milk chocolate**

**Enjoy a perfect moment of being imperfect.**



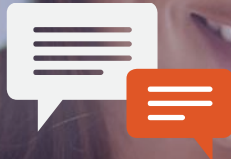
**rallies**

Source: Innova Market Insights, [Nestlé Rallies](#)



## For insight-led future growth opportunities

The Innova Database is an online, cutting edge food and beverage product database – created by a dedicated team of industry-leading food and beverage experts that collect the latest data from more than 90 countries.



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## Innova Market Insights

Innova operates the biggest food and drink product database in the world. We pick up and record brands, ingredients, claims, packaging, patents and promotions in every major market.

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**Thank You**

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IN SUCCESS :: 2021  
the almond conference