

Collagen
An Iconoclastic Ingredient

WELCOME

*Len, Traci and Elizabeth
&
All attendees today and those who view in the coming weeks*

Thank you for the next few minutes of your attention

I can be reached
Kenn@KennIsrael.com or Kenn@BeyondBrands.org





1

Collagen
An Iconoclastic Ingredient

Collagen is the **"Do-It-All"** Ingredient that Bucks, Leads and Follows the Industry Trends

Over 2000 collagen results on Amazon

- Powders
- Capsules & Tablets
- Liquids (Drinks, shots, Waters)
- Gummies & Gels


28 Types of Collagen have been identified – 3 predominate in supplements

Currently 4 Major Biomass Sources with more emerging

Collagen is a complex Triple Helix Molecule (previously) only found in animal sources

2021 Over \$8,000,000,000.00 in sales

Let's Begin...


2

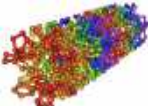
Collagen - What is It?

Collagen is an extraordinarily complex molecule




A Triple Helix Protein

- Comprising over 30% of the bodies Protein
- The foundation of the matrix that provides structure to all other tissues
- Abundant in Bone, Skin, membranes, tendons and ligaments, connective tissues, solid organs, Muscles, etc

Sourced from Bovine, Porcine, Avian, and Piscean sources
Skin, Bones, Frames, Scales



Collagen and Gelatin are both Similar & different
Collagen and Gelatin come from the same source
Collagen is a degraded form of gelatin and does not have gel forming properties
Native Collagen is not water soluble
Collagen Peptides and Gelatin are water soluble

3

Collagen - What is It?

Includes Gelatin, Collagen Peptides or Hydrolyzed Collagen & Undenatured or Native Collagen
Complex Manufacturing Process

Starting materials are cleaned (degreased) dried and pulverized to create abundant surface area

Deminerzalization through treatment with Acetic Acid

Hot Water Extraction to form Gelatin

Enzymatic or Acid Hydrolysis

Ion Exchange

Filtration
Evaporation
Sterilization
Drying

INGREDIENT TRANSPARENCY CENTER

TRUST TRANSPARENCY CENTER

INC
INGREDIENTS IN CERTAIN PRODUCTS
CERTAIN TYPES OF USE

4

Collagen -Global Suppliers

Collagen is currently on trend to Exceed 16 billion in sales by '28

Important suppliers include (but are not limited to)

INGREDIENT TRANSPARENCY CENTER

TRUST TRANSPARENCY CENTER

INC
INGREDIENTS IN CERTAIN PRODUCTS
CERTAIN TYPES OF USE

5

Collagen Peptide and Gelatin Market Share by Application (2020) (%)

U.S. Collagen Market

Global Collagen Market

U.S. Global Market Segment by Type, 2019 - 2021 (Millions)

6

Collagen – Pain in the Chain

Collagen is a byproduct of the meat industry including -Beef, Pork, Chicken, Fish
Dependent on a supply of fresh de-musclcd Carcasses, Hides, Skin, and Scales

Collagens primary inputs are Water Fertilizer Grain Energy and Transport

Covid demonstrated that the meat industry was quite vulnerable, and it created
supply shocks to the meat industry and downstream processors

The Invasion and War in Eastern Europe will have massive consequences

- 12% of the worlds Calories
- 20-25% of its maize and grain
- 15-20% of fertilizers
- Significant agricultural processing



Herds and flocks are already being culled to adjust for supply pressure

De-Globalization, Trade Sanctions, Increased Energy Costs, Etc. will further hamper
the food supply and downstream products such as collagen

Expect Price Inflation & Possible Shortages growing worse into '23



7

Collagen – State of the Science

Collagen is increasingly substantiated for a variety of purposes

The number of clinical investigations into collagen has sharply increased in the last 5
years

The research is increasingly specialized supporting specific commercial products

Research is not fungible across various collagen ingredients

Insights from the National Library of Medicine – NIH "Pub Med"



Joint Health and function

The search term "Joint Health Collagen Supplementation" produced over 5300
results – 929 in the last year

Beauty From Within

The search term "Skin Appearance Collagen Supplementation" produced over 3000
results – 445 in the last year



8

Collagen – Diverse Uses

Use is concentrated in Medical/Pharma , Foods & Supplements, and Cosmetic

Medical/Pharma

- Wound Healing
- Surgical Dressings
- Burn Care
- Bone & Joint Repair and Dental Implants

Dietary Supplements

- Beauty From Within
- Joint Care
- Bone and Muscle Support
- Immune Support, Gut Health and Weight Loss

Food

- Texture
- Other technical functions
- Nutrients and functional foods

Cosmetics

- Injectable
- Topical Applications for skin and hair



9

Collagen – Supplement Trends

The Iconoclast

Dietary Supplement Trends in 2022

- Plant Based **X**
- Vegan **X**
- Sustainable **X**
- Protein **Y**
- Paleo and Keto Friendly **Y**
- Return to "Food" **Y**
- Simple **Y**

Despite NOT following the most important trends – Collagen has outpaced the industry

- Collagen has certainly leveraged Beauty From Within
- Collagen has succeeded in Joint Health – Probably because it works
- Some success in active nutrition and gut health
- Previous success in Weight Loss
- Emerging in Immune Health & Heart Health





10

Collagen – Fixing Collagen

Does Collagen Need to be Fixed???




- Huge carbon footprint
- Animal agriculture based
- Essentially Unsustainable
- Back Story is Kinda Gross

How to Fix Collagen

- Darling is commercializing a SFL platform (Soldier Fly Larvae) to produce biomass
- Geltor is using a crispr cas 9 modified bacterium to produce Collagen
 - Producing Collagen type 21
 - Raised 93 million on their "B" round last year
- Evonik is using advanced fermentation to produce pharma grade collagen
- Aleph Labs is using cell culture to grow collagen – Product in '23

On the other Hand...

- It works well
- The science is good
- It sells
- Customers are Happy




11

Collagen

An Iconoclastic Ingredient

Again....

Thank you!

12
