

# Expanding Clean Label Excipients Globally



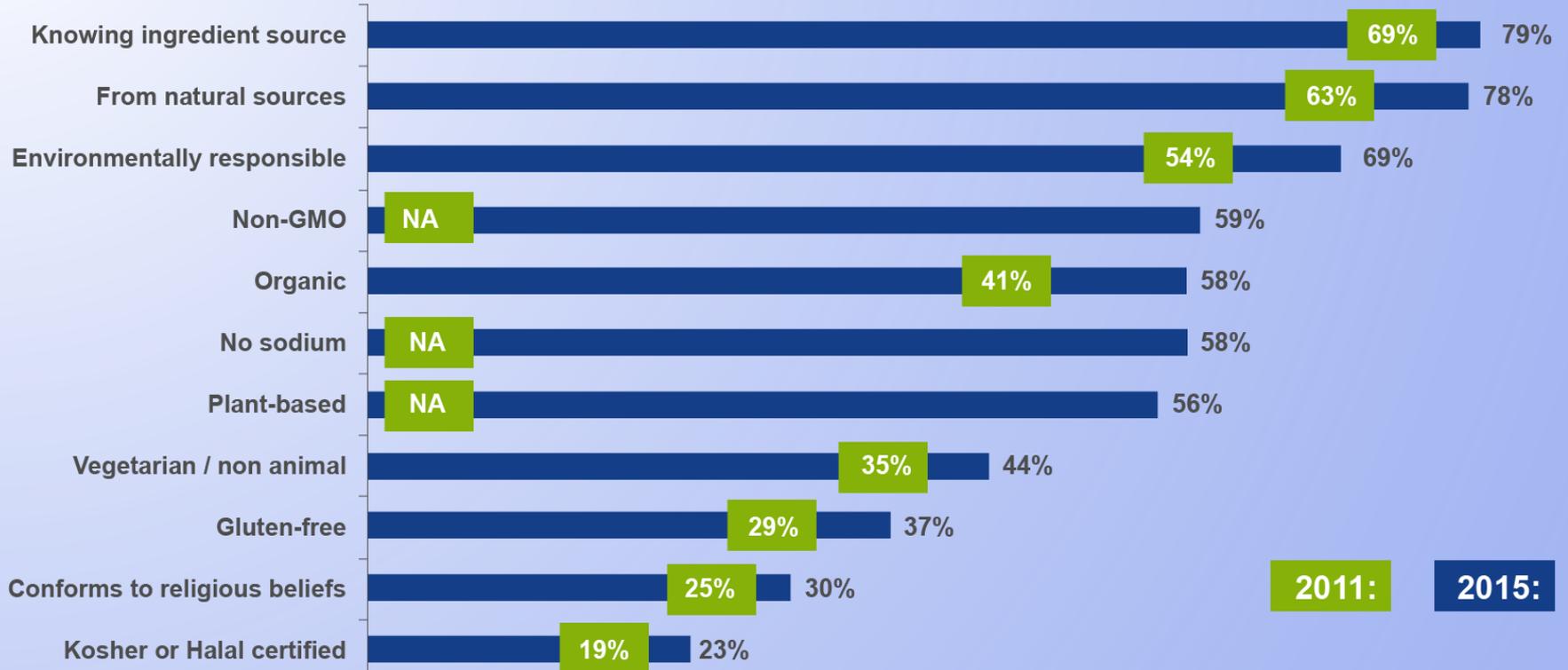
**SupplySide West 2016**

*Presented by:*  
**Steve Peirce**  
**Steve Dybdal**

# OVERVIEW

1. Expanding Clean Label Excipients
2. New Product Launch
3. Breakthrough Data

# LIFESTYLE INFLUENCES ON CONSUMER DECISIONS



Source: NMI SORD: 2011, 2015

CAPSUGEL®

# IMPACT OF CLEAN LABEL

## Consumer Demand

- Capsules
- Tablets

## Your Production Needs

- Flow Agent (Not  $\text{SiO}_2$ )
- Lubricant (Not Mg Stearate)

## Organic Legislation

- $\text{SiO}_2$  not allowed in organics as long as rice hulls are commercially available
- Mg Stearate use causes product to become “Made With”
- Stearic Acid not approved for organics

# 2011 RIBUS Brings Clean Label Excipient Options to the Market



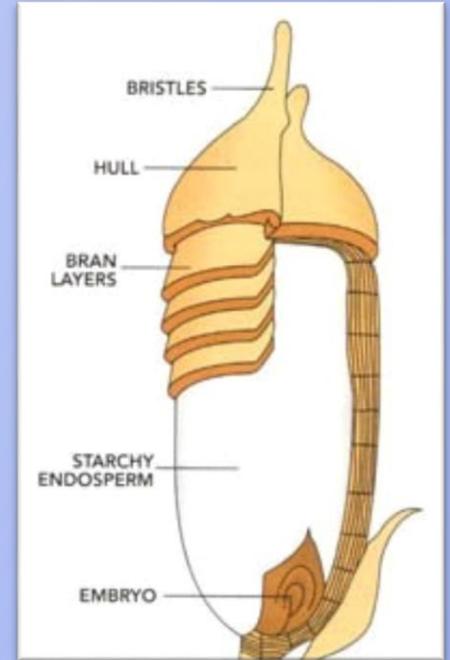
## —GENERATION 1—

### Anatomy of a Rice Plant

20% Hulls => Nu-FLOW®

10% Bran => Nu-RICE®

70% => White Rice



# “Clean Label” Alternatives for Excipients



- Functions as flow aid and glidant (~20% plant based silica)
- 1:1 replacer for SiO<sub>2</sub> (E-551)
- Label declaration “Rice Hulls” or “Rice Concentrate”
- Clean label, Non-GMO, Vegan, Organic



- Functions like stearates as a lubricant & compaction aid
- 2 or 3:1 replacer for Mg Stearate (E-470b)
- Label declaration “Rice Extract”
- Over-mixing is not a problem
- Clean label, Non-GMO, Vegan, Organic

**For use in capsules, tablets and powders.**

# —GENERATION 2 ARRIVES—

# Nu-MAG™

- Organic or Natural
- Enhanced Functionality

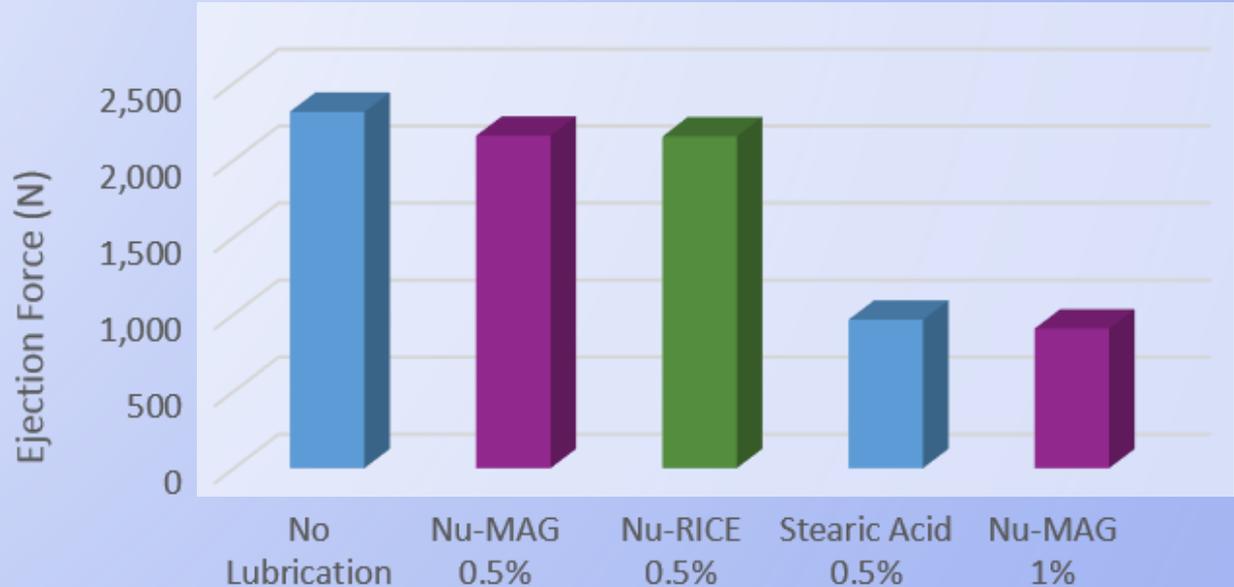
Label as “Rice Extract Blend”

- Nu-RICE®
- Nu-FLOW®
- Gum Arabic
- Sunflower Oil

Developed by BioGrund & Licensed by RIBUS.

# PERFORMANCE DATA

## Tablet Lubrication: Stearic Acid vs. Nu-MAG



### Tablets

- Romaco
- Natoli

### Capsules

- Customers

Romaco Kilian's Tableting robot STYL One Evolution, speed 1,125 tablets /min.

# ...“Nu-MAG™ Performed as well as Mg Stearate”

Robert Sedlock, Natoli Institute, Long Island University



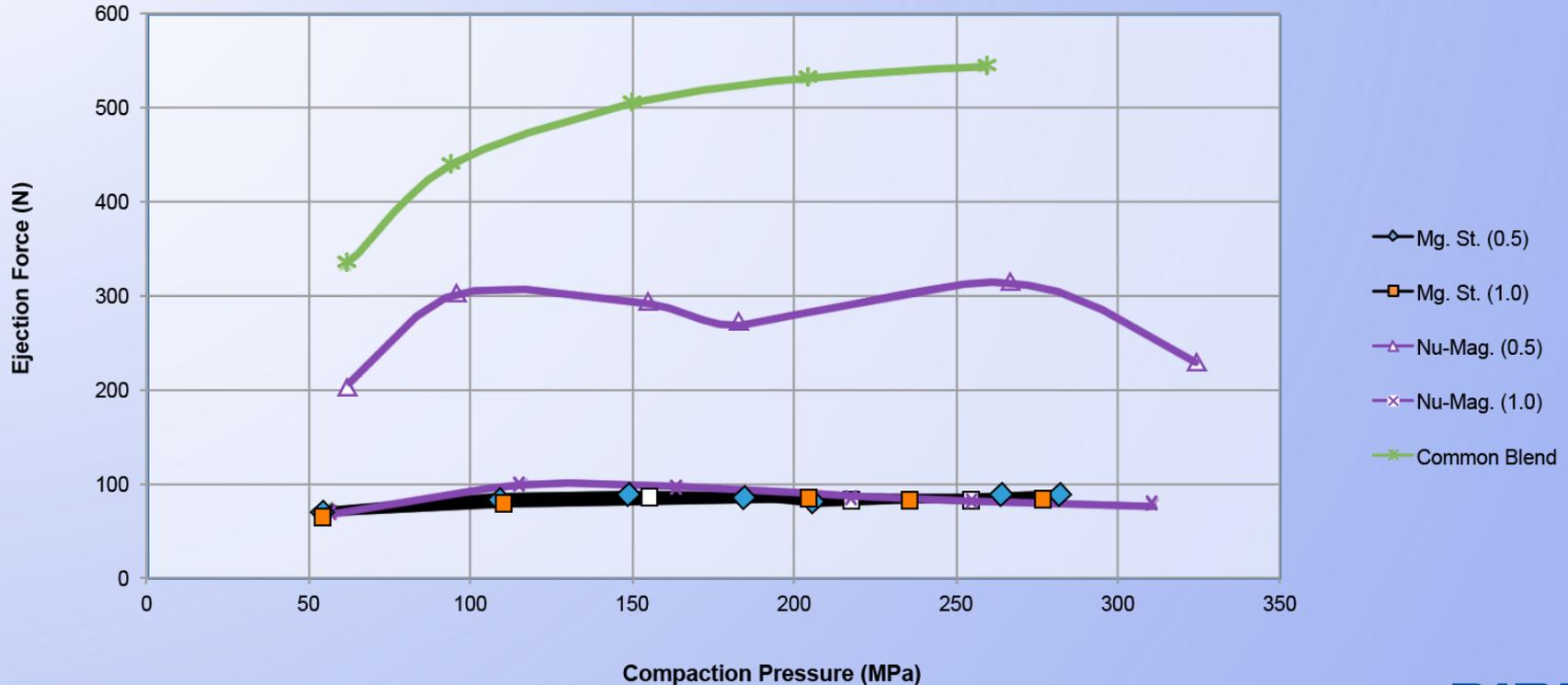
- Ejection Force
- Powder Flow / Rheology
- Break Force, Hardness
- Friability, Disintegration
- Blend Time Study (Compaction)
- Dwell Time Study

## Formulation

- Emcocel 50M 50%
- Explotab 5%
- Emdex 42 - 44.5%
- Lubricants
  - Mg Stearate 0.5, 1, 2, 3%
  - Nu-MAG 0.5, 1, 2, 3%

# EJECTION FORCE IS COMPARABLE

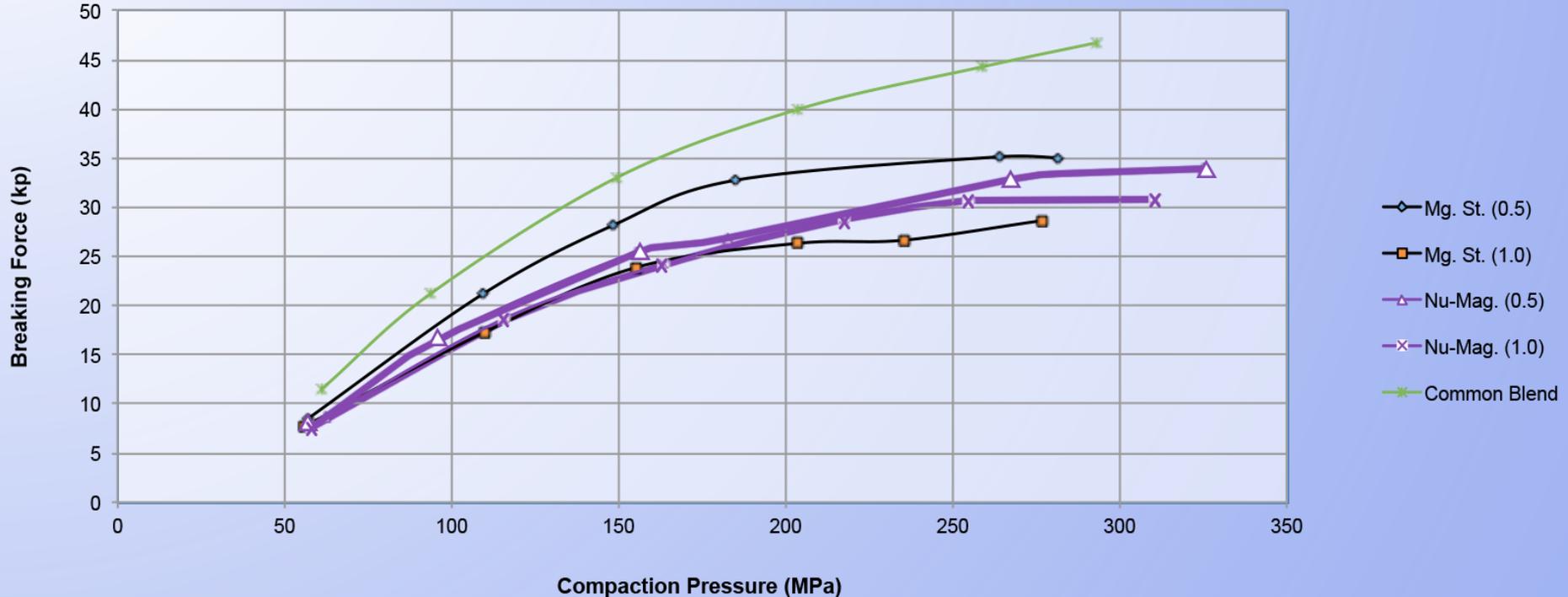
## Ejection Force vs. Compaction Pressure



Test conducted by, Natoli Institute at Long Island University.

# HARDNESS IS COMPARABLE

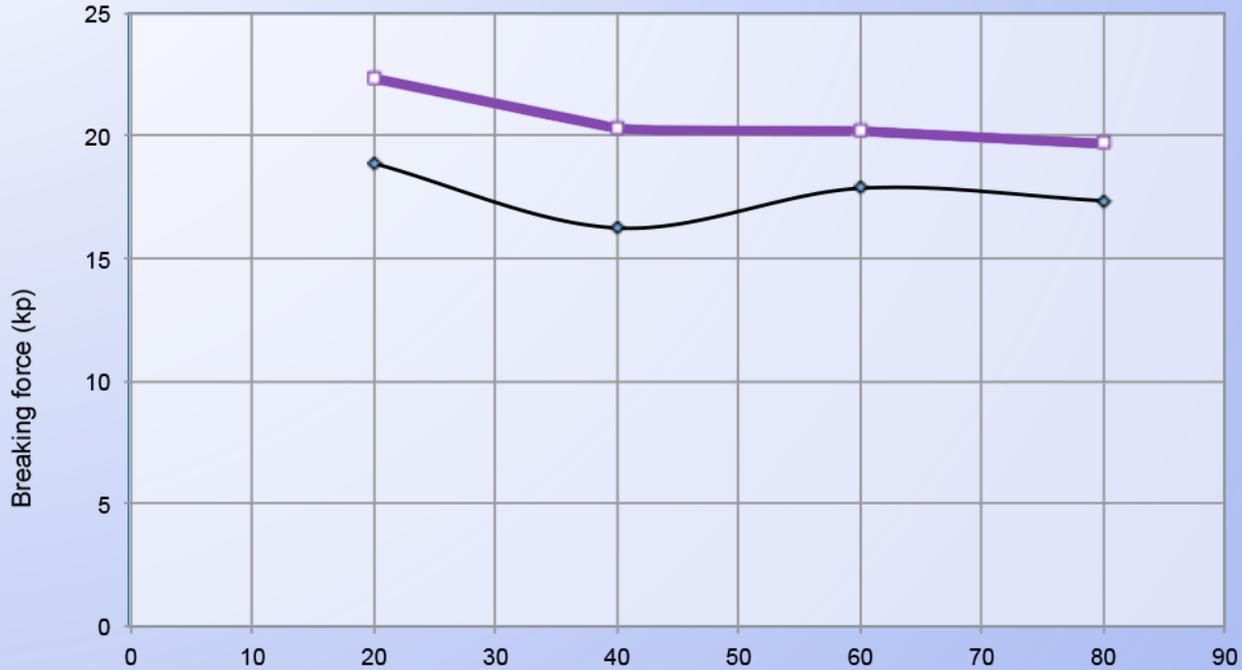
## Breaking Force vs. Compaction Pressure



Test conducted by, Natoli Institute at Long Island University.

# BREAK FORCE COMPARABLE AT SPEEDS

## Breaking force vs. Turret RPM

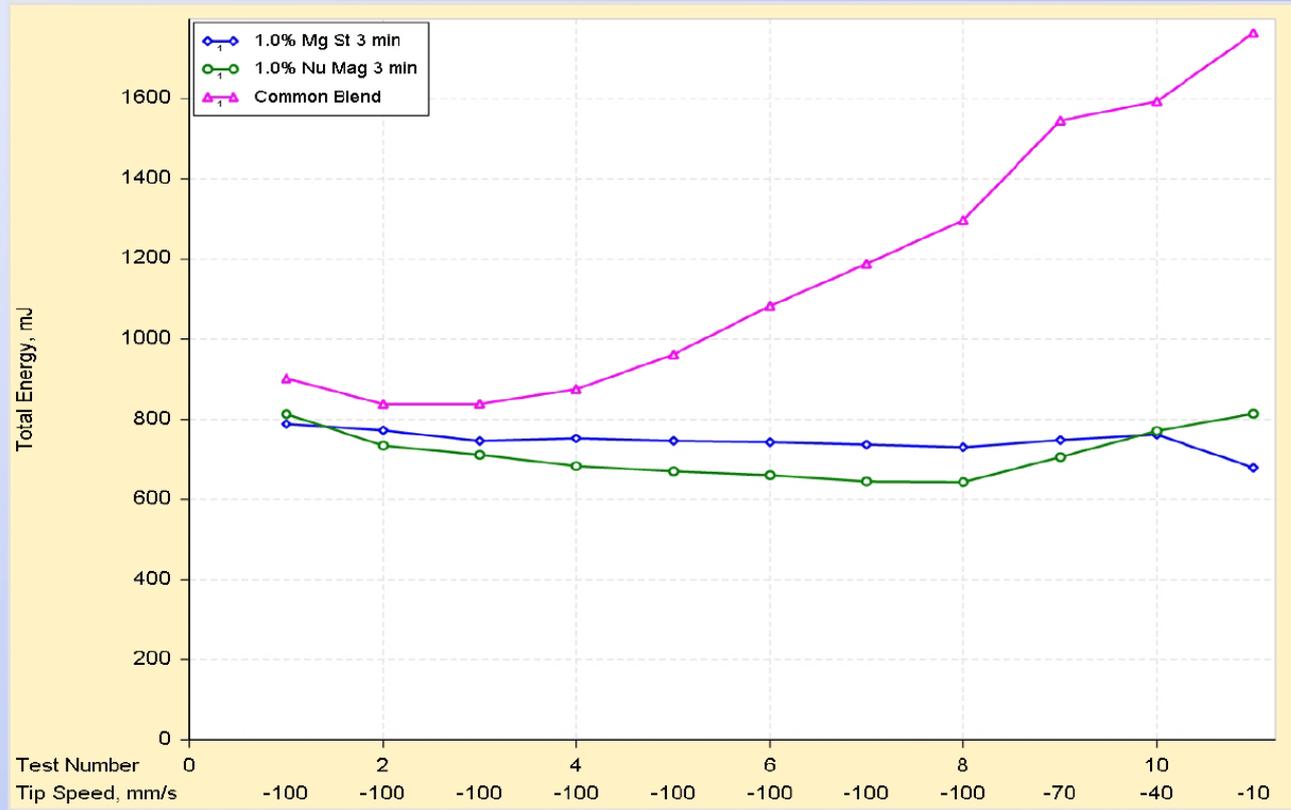
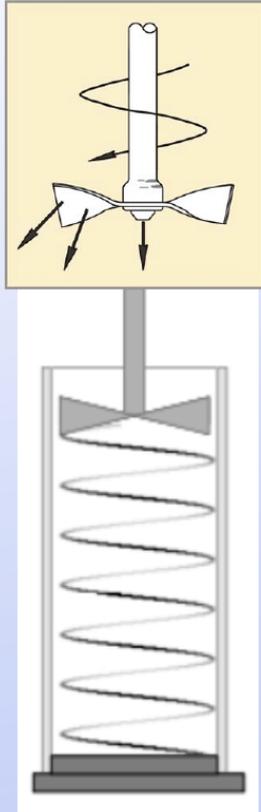


**Nu-MAG™ is  
17.5% Harder**

◆ Mg. St. (1.0)  
□ Nu-Mag. (1.0)

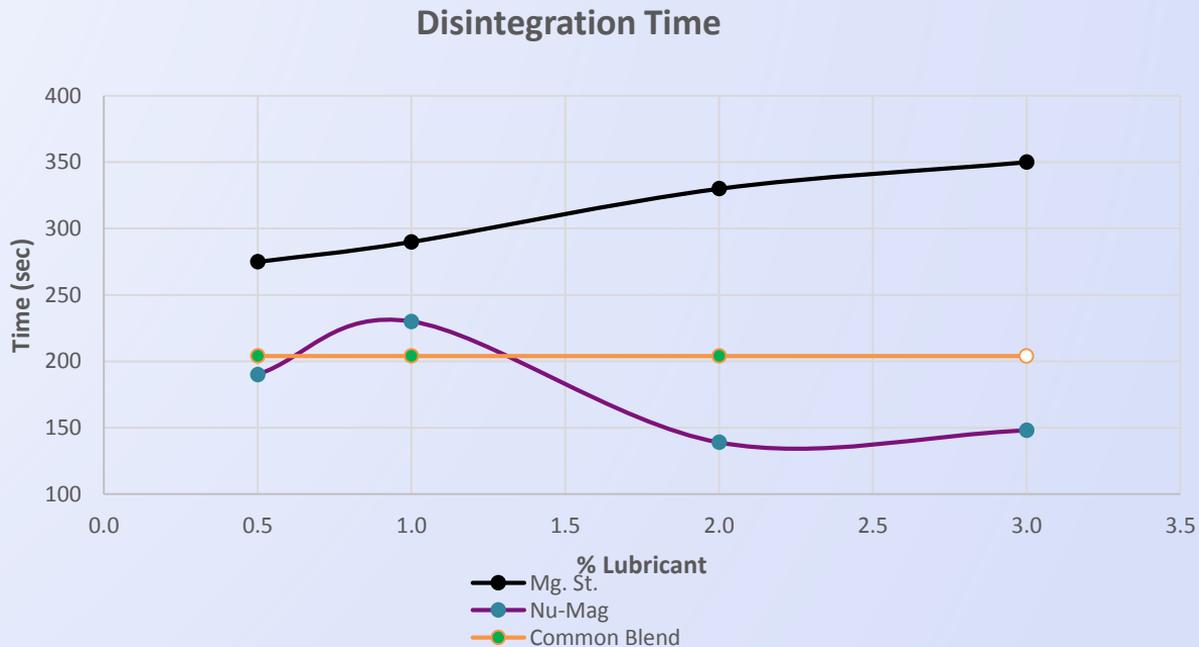
Test conducted by, Natoli Institute at Long Island University.

# POWDER FLOW (ENERGY REQUIREMENTS)



Test conducted by, Natoli Institute at Long Island University.

# DISINTEGRATION ADVANTAGE TO Nu-MAG™



Test conducted by, Natoli Institute at Long Island University.

# Clean White Tablets with 1%

# Nu-MAG™



1% Nu-MAG™, paddle feed, 3 minute mix.

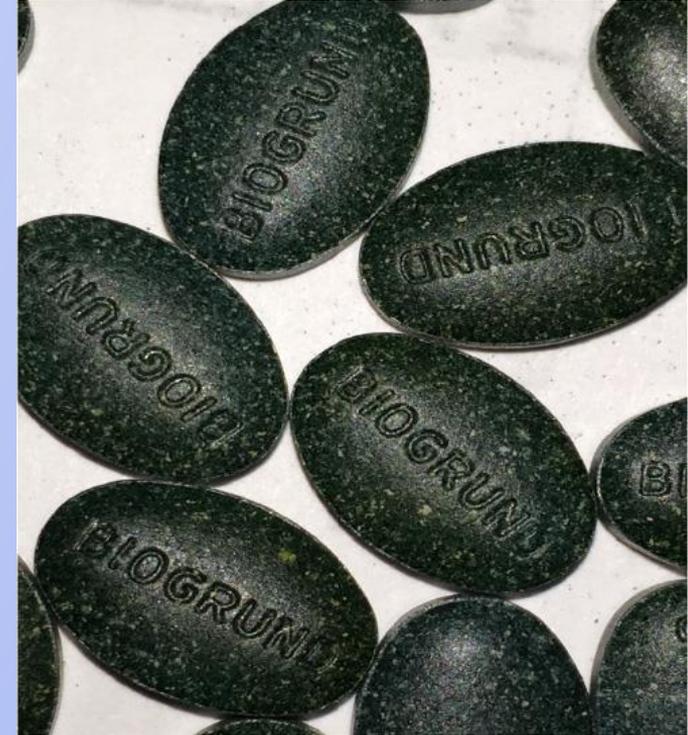
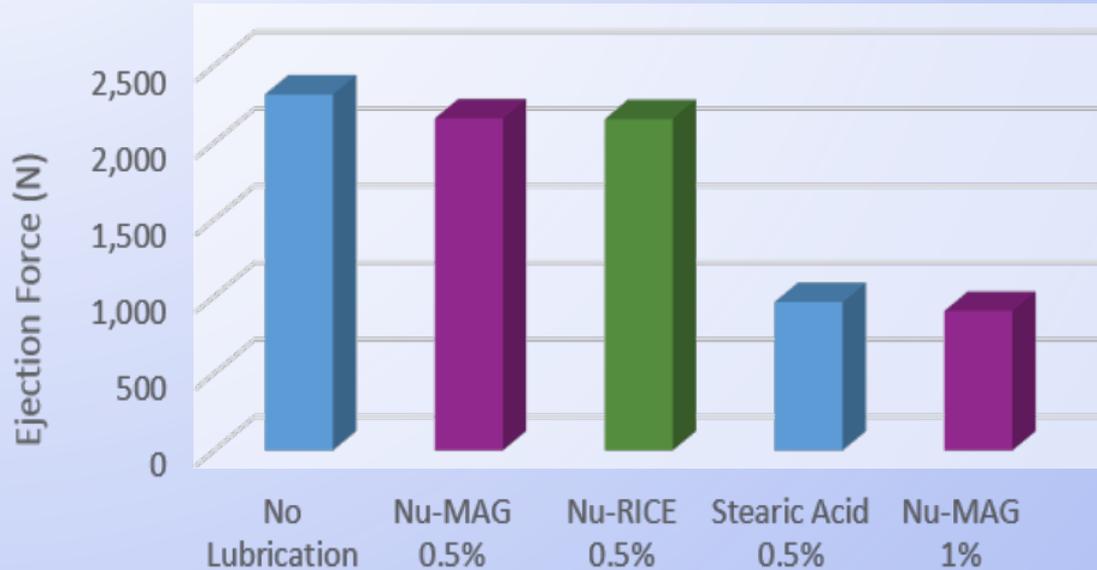
Test conducted by, Natoli Institute at Long Island University.

# EARLY DATA



# EARLY DATA

## Tablet Lubrication: Stearic Acid vs. Nu-MAG



Romaco Kilian's Tableting robot STYL One Evolution, speed 1,125 tablets / minute.

# CUSTOMER COMMENTS ON CAPSULES

“Wanted to give you some feedback. The product is working GREAT!!! We are looking to scale up to over a million capsules...”

“We have done R&D, and will use it in 2 products. We are now going to test in tablets.”

“Looking forward to the organic version.”

## Data Collection

Lubrication

Slug  
Transfer

Splits

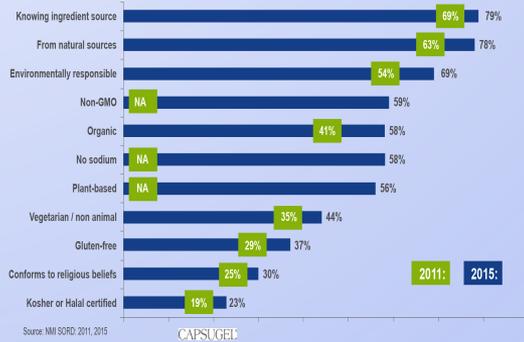
Deformed  
Capsules

# SUMMARY

## GENERATION 2 ARRIVES

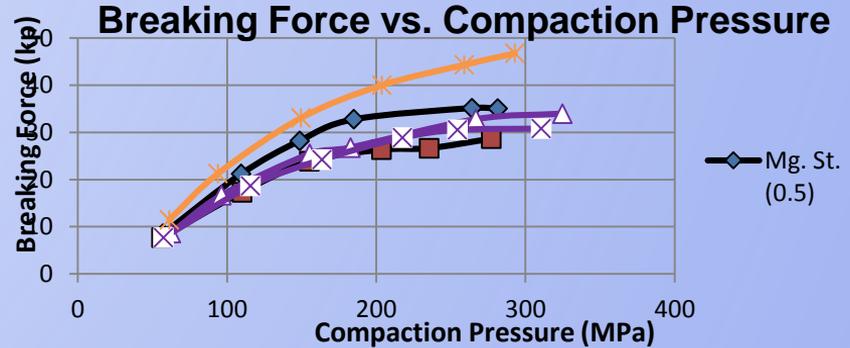
### Nu-MAG™

#### LIFESTYLE INFLUENCES ON CONSUMER DECISIONS



...“Nu-MAG™ Performed as well as Mg Stearate”

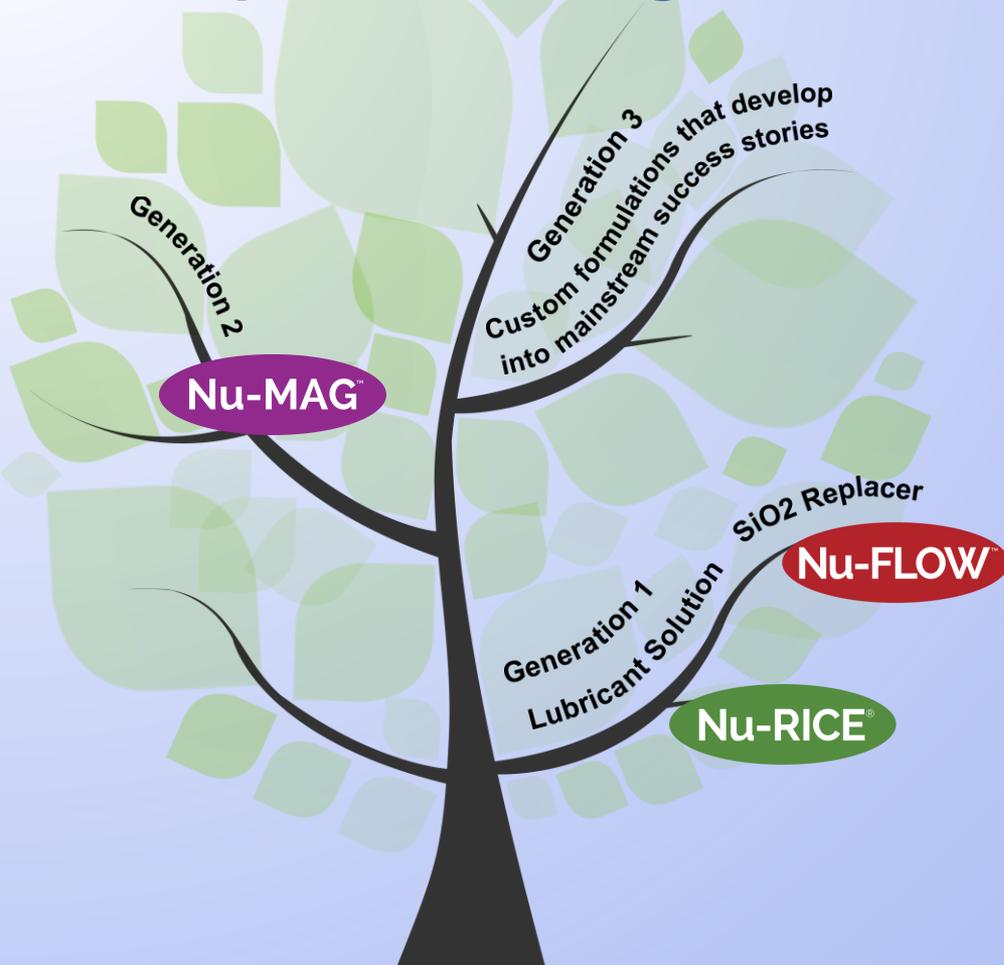
Robert Sedlock,  
Natoli Institute  
Long Island University



“Nu-MAG works GREAT in capsules!”



# Excipients Growing from Generation 1 to 2



From Clean Label Alternatives to  
**Alternatives with  
Enhanced Functionality!**

**THANK YOU!**



**Booth W 106**

*Presented by:*  
**Steve Peirce**  
**Steve Dybdal**