

# Introducing: Suga<sup>®</sup>Citrate!

Dennis Abbeduto, Personal Care Business Manager



## Clean Beauty is Here to Stay

- Safe for the consumer
  - Low irritation
  - Low toxicity
  - Functional
- Safe for the environment
  - Not reliant on petrochemicals
  - Not environmentally destructive at any point in life cycle
  - Not persistent in the environment
- Net good for the world
  - Fair trade
  - Inclusive

### Sustainability matters more in 2020, shows new data

By Deanna Utroske [↗](#)

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# Gentle/Sensitive Cleansing on the Rise



- Gentle + Cleanser

**41.9K +11.6%**  
Searches      Year-Over-Year Growth

- Cleanser

**339.6K +10.9%**  
Searches      Year-Over-Year Growth



- Cleansing Products + Sensitive

**29.2K +1.6%**  
Searches      Year-Over-Year Growth

- Sensitive

**188.6K -1.2%**  
Searches      Year-Over-Year Growth

## The Suga Platform

- Our Suga platform has delivered many innovations to the industry:
  - Conditioning aids: (Poly) SugaQuat
  - Anionic surfactants: (Poly) SugaNate, Poly SugaPhos
  - Amphoteric surfactants: Poly SugaGlycinate
  - Emulsifiers: Poly SugaMulse
  - Silicone Nonionics: Poly SugaSil
- ALL with lower irritation than their traditional counterparts



## Introducing: Suga<sup>®</sup>Citrate L1C

- **Sulfate-free anionic surfactant**
- **Replaces sulfates and expensive sulfate replacements**
- New APG CITRATE using our own APG derivatization technology
- Patent pending
- Low irritation
- 100% biobased, end to end
- Safe for people and the environment
- Enables a wide variety of formulation benefits



## Suga<sup>®</sup>Citrate L1C

- *INCI:*        **Disodium Laurylglucosides Hydroxypropyl Citrate**
- *CAS:*        TBD
- *Listings:*    USA (Cosmetic Use Only)

Suga<sup>®</sup>Citrate L1C is “**Derived Natural**” with a **Natural Origin Index of 1.0** in accordance with **ISO 16128** guideline.

## Suga<sup>®</sup>Citrate L1C

### *Typical Properties*

|                         |                           |
|-------------------------|---------------------------|
| Appearance @ 25°C       | Transparent Liquid        |
| <b>Appearance @ 5°C</b> | <b>Transparent Liquid</b> |
| Ionic Character         | Anionic                   |
| Solids, %               | 40                        |
| NaCl, %                 | 3                         |
| pH (10% aqueous)        | 7                         |
| Color, Gardner '98      | 1                         |

# SugaCitate L1C

| <b><i>Surfactant Performance</i></b>       | <i>DI Water</i> |
|--------------------------------------------|-----------------|
| <b>Ross-Miles Foam (1% Active), mm</b>     |                 |
| Immediate                                  | 150             |
| 1 min                                      | 130             |
| 5 mins                                     | 130             |
| <b>Draves Wetting (1% Active), seconds</b> | 5.5             |

## SugaCitate L1C Benefits

- All components from plant sources
- Free from all objectionable ingredients
  - PEG, 1,4-dioxane
  - Sulfates
  - Preservatives
  - Petrochemicals
  - Prop 65 components
- Mild to skin and eyes
- Reduces irritation of other primary surfactants
- Aids in foam and viscosity building in formulation



# SugaCitate L1C Environmental Impact

## *Biodegradability*

- OECD 301 (301D) Ready biodegradability test in an aerobic aqueous medium
  - Sample exceeds ready biodegradability requirement



## SugaCitate L1C Irritation

### **MatTek® Epi-Ocular Test**

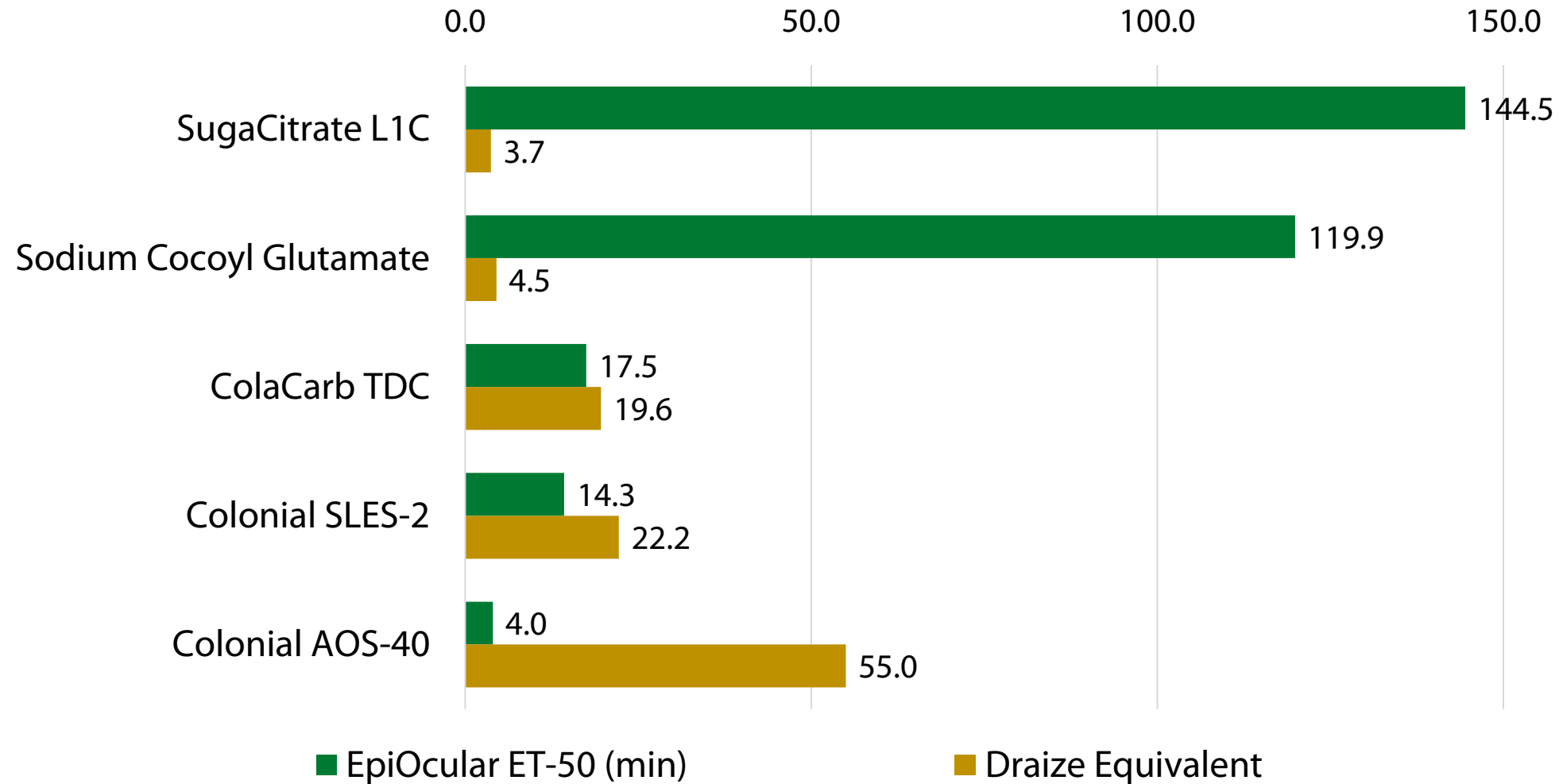
*In vitro* epidermal keratinocytes (10% solids @ ph 6.0)

ET-50 test is **144.5 minutes**

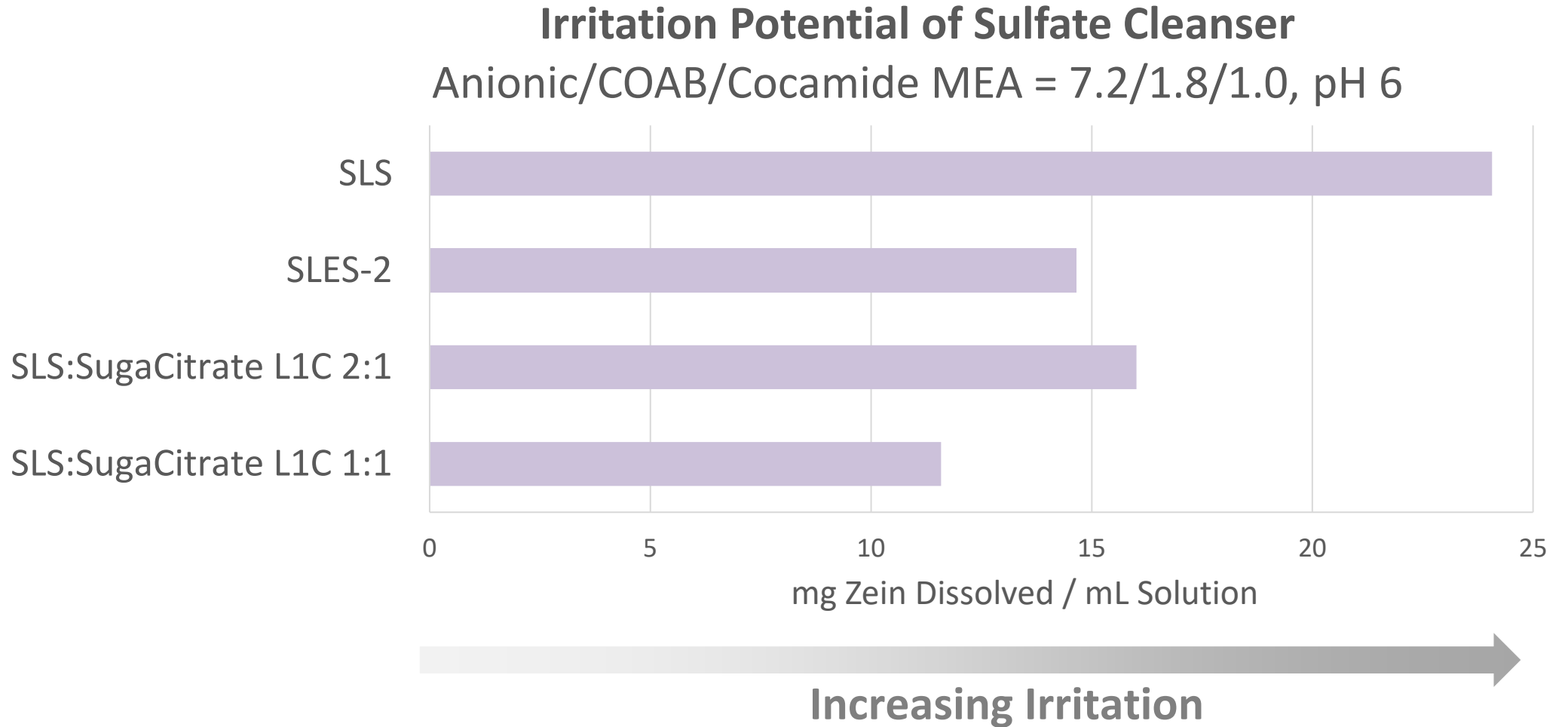
Results indicate 'minimally irritating' classification.

| EpiOcular ET-50 (mins) | Irritancy Classification | Example                   |
|------------------------|--------------------------|---------------------------|
| 256 – 26.6             | Non-Irritating, Minimal  | PEG-75 Lanolin, Tween 20  |
| 26.5 – 11.8            | Mildly Irritating        | 3% Sodium Dodecyl Sulfate |
| 11.7 – 3.45            | Moderate Irritation      | 5% Triton X-100           |
| < 3.45                 | Severe, Extreme          | 5% Benzalkonium Chloride  |

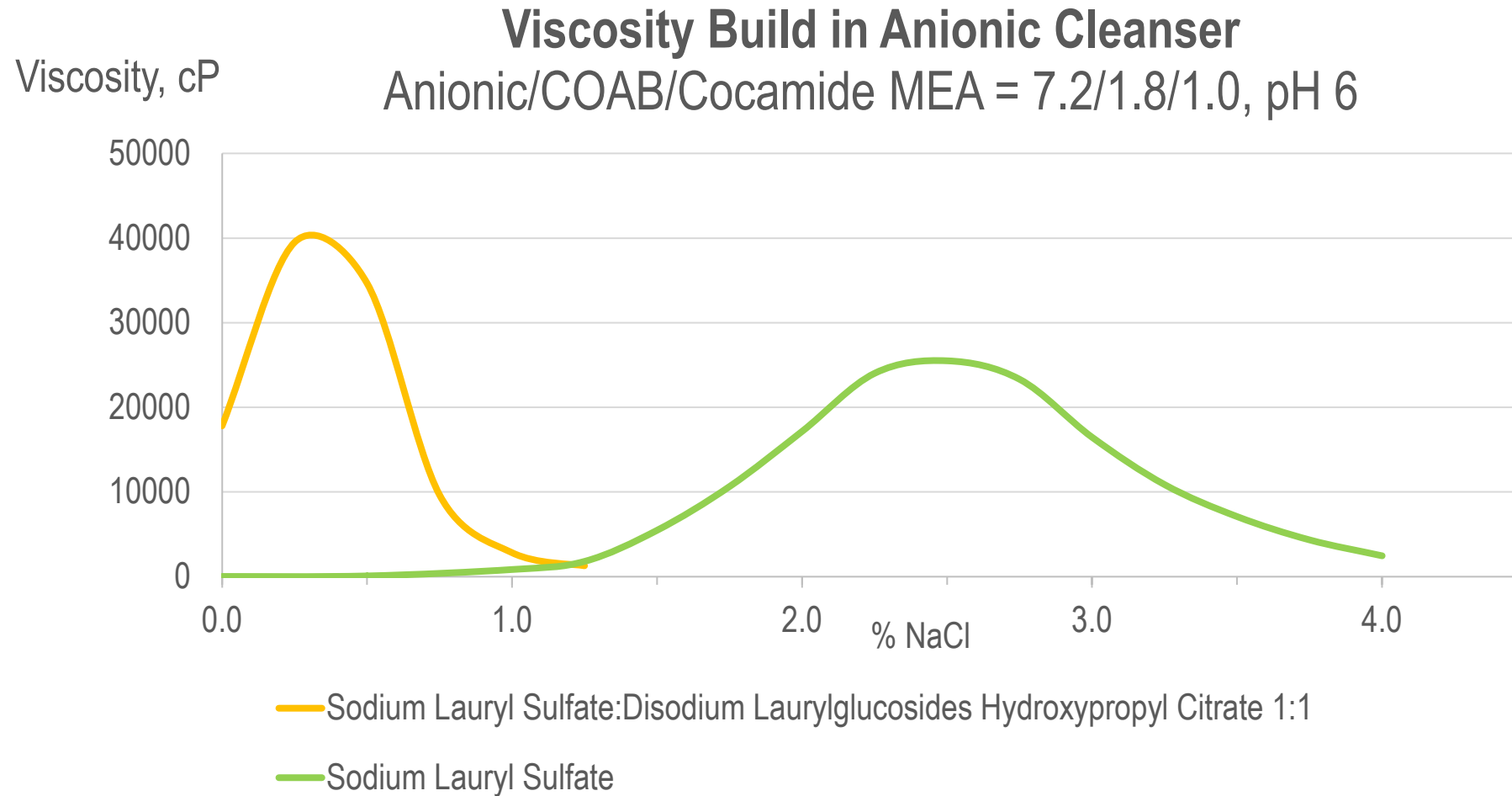
# Comparative Irritation via MatTek EpiOcular



# Using SugaCitrato to Reduce Product Irritation

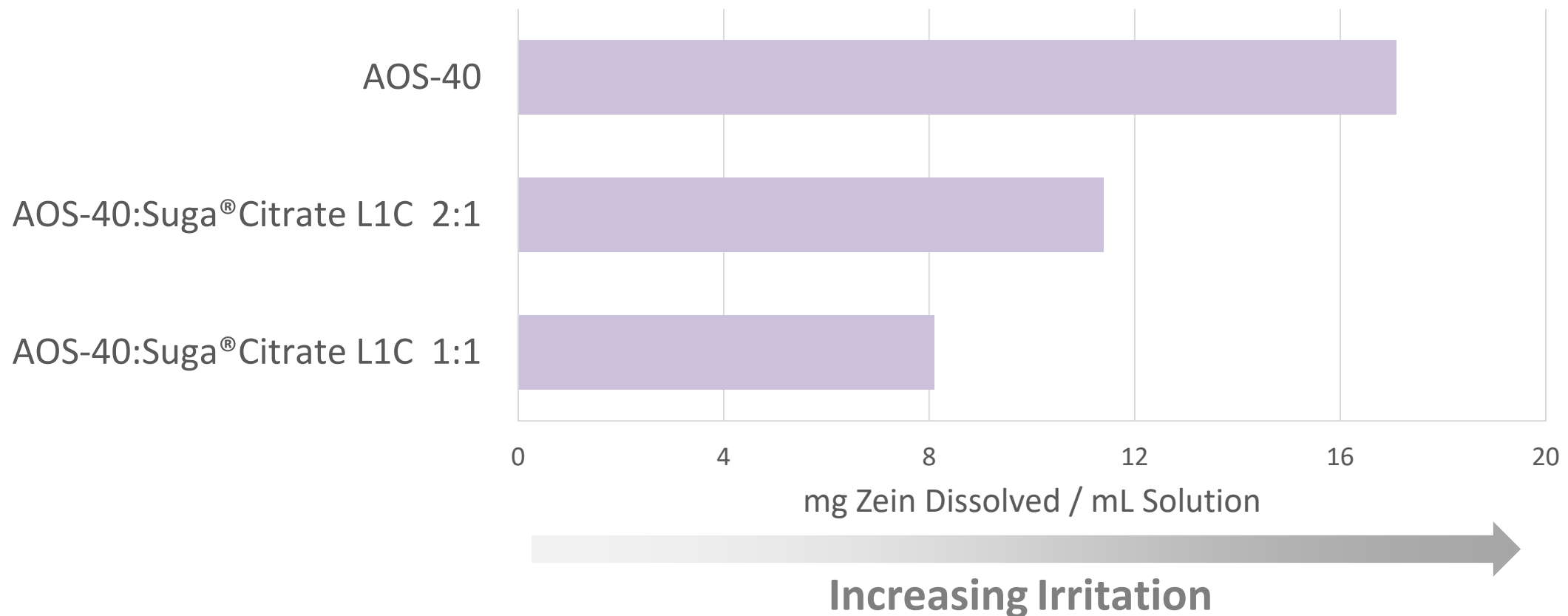


# SugaCitate Impact on Viscosity Building



# Using SugaCitate to Reduce Product Irritation

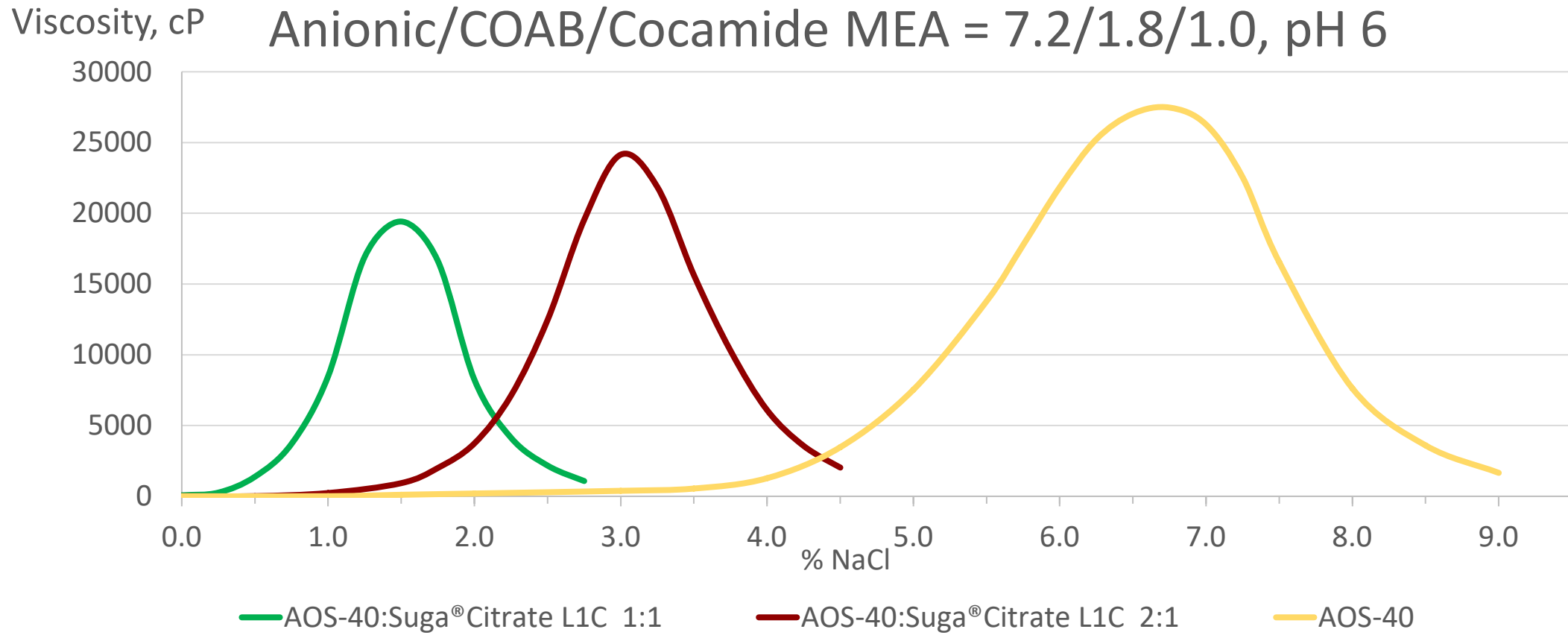
**Irritation Potential of Sulfate-Free Cleanser**  
 Anionic/COAB/Cocamide MEA = 7.2/1.8/1.0, pH 6



# SugaCitrate Impact on Viscosity Building

## Viscosity Build in Anionic Cleanser

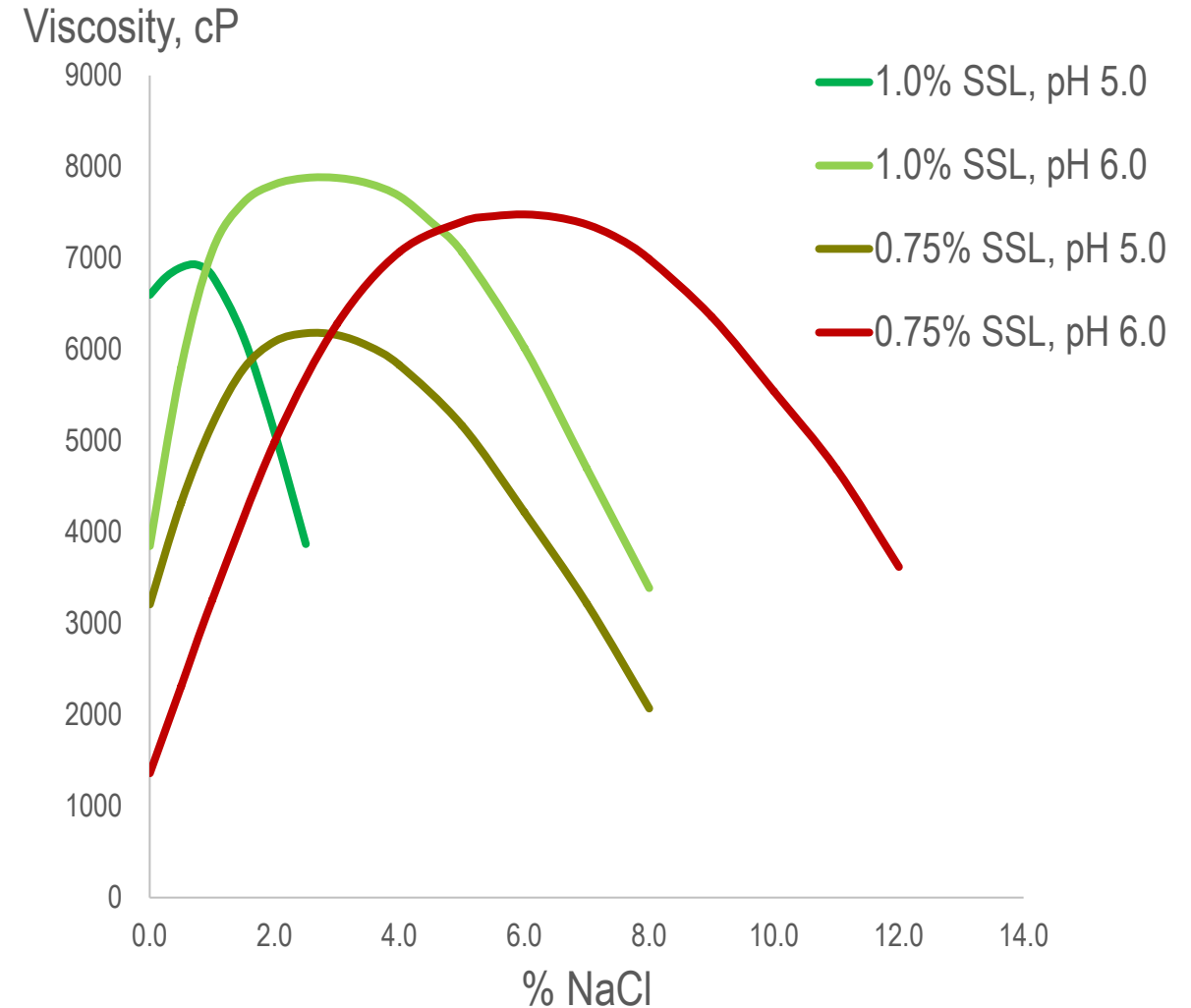
Anionic/COAB/Cocamide MEA = 7.2/1.8/1.0, pH 6



# Formulating Sulfate-Free Cleansers

- SugaCitate L1C can be used to generate very low irritation cleansers with good viscosity
- Test system

| Ingredient                   |          |
|------------------------------|----------|
| Water                        | 73.00    |
| <b>Suga®Citate L1C</b>       | 16.00    |
| <b>Poly Suga®Glycinate C</b> | 2.50     |
| <b>Cola®Teric CBS-HP</b>     | 5.00     |
| Sodium Methyl Cocoyl Taurate | 3.00     |
| Sodium Stearoyl Lactylate    | Graph    |
| Citric Acid 50%              | qs to pH |



## SugaCitate L1C Applications

- Use as a primary anionic surfactant in all types of cleanser systems for
  - Mild cleansing
  - Foaming
  - Viscosity building
  - Irritation reduction
- Wipes
  - Mild cleansing
  - Wetting
- Syndet bars
  - Mild cleansing
  - Foaming
  - Irritation reduction



# Suga®Citrate L1C in Formulation

## Shampoo

# 1055

| INCI Name                                            | Trade Name                         | %            | Function                      |
|------------------------------------------------------|------------------------------------|--------------|-------------------------------|
| Water                                                | Water                              | qs to 100.00 | Carrier                       |
| Polyquaternium-10                                    | UCARE™ Polymer JR-30M <sup>1</sup> | 0.20         | Conditioning                  |
| Cocamidopropyl Hydroxysultaine                       | <b>Cola®Teric CBS</b>              | 7.00         | Viscosity build               |
| Disodium Laurylglucosides Hydroxypropyl Citrate      | <b>Suga®Citrate L1C</b>            | 13.00        | Ultra-mild primary surfactant |
| Disodium Lauryl Sulfosuccinate                       | <b>Cola®Mate LA-40</b>             | 12.00        | Foam boosting co-surfactant   |
| Polyquaternium-81                                    | <b>Poly Suga®Quat S1210P</b>       | 3.00         | Mild conditioning             |
| Fragrance                                            | Fragrance <sup>2</sup>             | 0.30         | Fragrance                     |
| Benzyl Alcohol and Ethylhexylglycerin and Tocopherol | Euxyl® K 900 <sup>3</sup>          | 0.70         | Preservative                  |

<sup>1</sup>Dow, <sup>2</sup>Orchidia Fragrances, <sup>3</sup>Schülke & Mayr

## TYPICAL PROPERTIES

Appearance: Clear, Viscous Liquid  
 pH **5.0 – 5.5**  
 Viscosity 5,000 – 10,000 cP  
 Surfactant Solids **13.9 – 14.8%**

# Suga®Citrate L1C in Formulation

## Face Wash

# 2070

| INCI Name                                            | Trade Name                | %            | Function                          |
|------------------------------------------------------|---------------------------|--------------|-----------------------------------|
| Water                                                | Water                     | qs to 100.00 | Carrier                           |
| Disodium Laurylglucosides Hydroxypropyl Citrate      | <b>Suga®Citrate L1C</b>   | 15.00        | Ultra-mild primary surfactant     |
| Disodium Lauryl Sulfosuccinate                       | <b>Cola®Mate LA-40</b>    | 7.00         | Foam boosting co-surfactant       |
| Babassuamidopropyl Hydroxysultaine                   | <b>Cola®Teric BBS</b>     | 7.00         | Viscosity build                   |
| Cocamidopropyl Hydroxysultaine                       | <b>Cola®Teric CBS</b>     | 5.00         | Viscosity build                   |
| Cocamidopropyl PG-Dimonium Chloride Phosphate        | <b>Cola®Lipid C</b>       | 0.50         | Skin conditioning, antimicrobial* |
| Hydroxypropyl Bis-Hydroxyethyldimonium Chloride      | <b>Cola®Moist 200</b>     | 3.00         | Humectant                         |
| Fragrance                                            | Fragrance <sup>1</sup>    | 0.15         | Fragrance                         |
| Benzyl Alcohol and Ethylhexylglycerin and Tocopherol | Euxyl® K 900 <sup>2</sup> | 0.70         | Preservative                      |

<sup>1</sup>Orchidia Fragrances, <sup>2</sup>Schülke & Mayr

## TYPICAL PROPERTIES

Appearance: Clear, Viscous Liquid  
 pH **5.0 – 5.5**  
 Viscosity 2,000 – 4,000 cP  
 Surfactant Solids **16.4 – 17.6%**

## SugaCitrade L1C

### *To Remember*

- 100% naturally derived surfactant
  - Consumer-friendly chemistry
  - Easy storage and handling
  - Outstanding safety profile
  - Excellent performance in formulation
- 
- SugaCitrade L1C contains NO objectionable components



# *Thank you!*

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