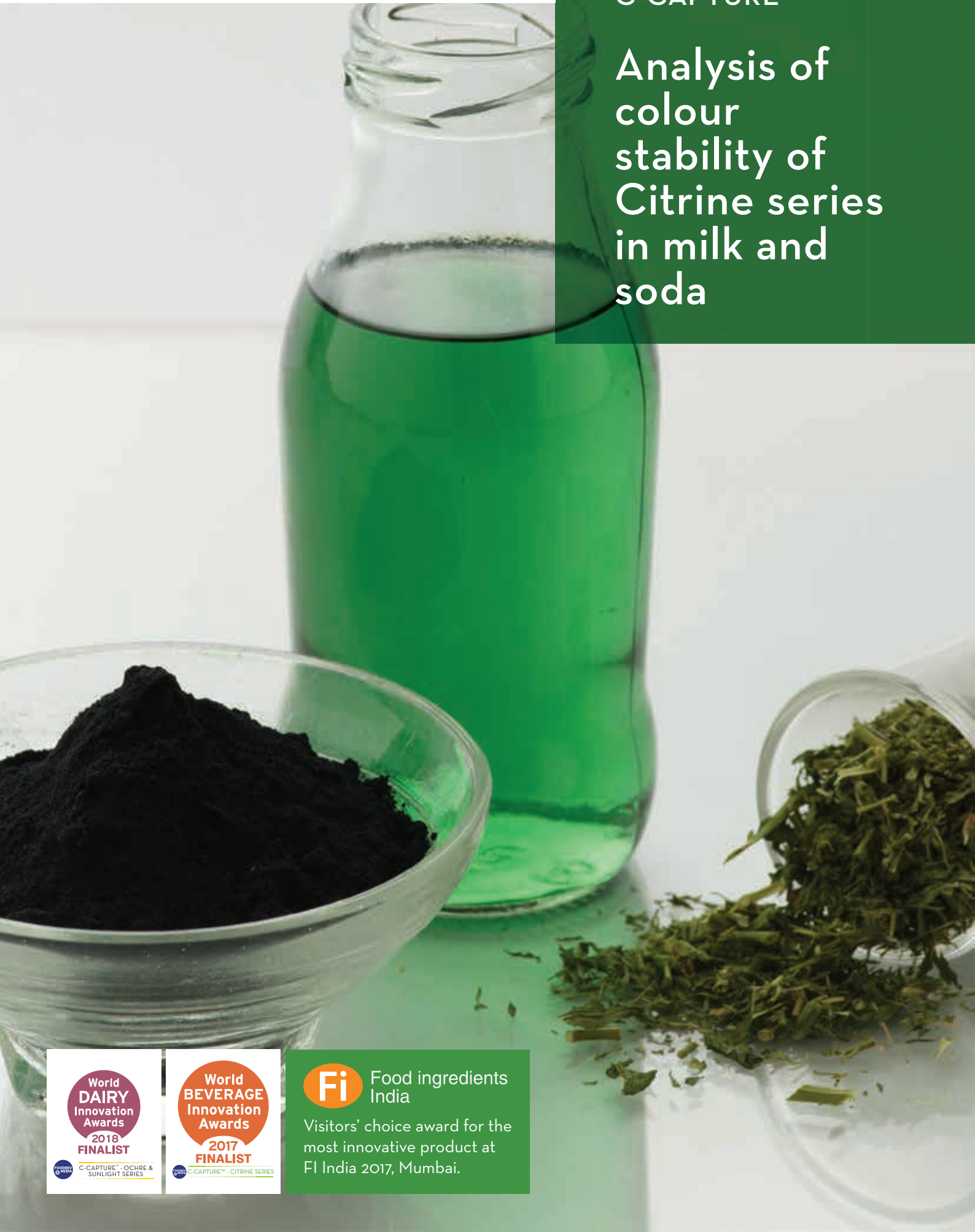


# Analysis of colour stability of Citrine series in milk and soda



 Food ingredients  
India

Visitors' choice award for the  
most innovative product at  
FI India 2017, Mumbai.

# SAFE AND NATURAL COLOURING SOLUTIONS FOR YOUR FOOD AND BEVERAGES

While choosing the food for our appetite, colour plays a very significant role. Addition of colour makes food more attractive and enhances its overall appeal. Over the past decade; manufacturers have started to switch from synthetic dyes such as FD&C's to natural alternatives. Natural dyes have in fact been used for centuries to colour food, beverages, textiles, medicine etc.

Kancor colours the world's leading food and beverage brands, keeping them appetising, vibrant and natural. Kancor offers a wide array of natural colours for various product platforms and systems through its product line, C-CAPTURE. C-CAPTURE has won the Visitor's Choice award for the most innovative product at FI-India 2017. Citrine Series, natural green hues of C-CAPTURE was selected as the Finalist in the World Beverage Innovation Awards, 2017 for the category Best Beverage Ingredients. Ochre and Sunlight series, natural yellow-orange hues of C-CAPTURE has recently been shortlisted as finalist in World Dairy Innovation Award 2018, in the categories - Best Dairy Ingredient and Best Dairy Product from Asia.

## STABLE, VIBRANT AND SAFE NATURAL GREEN HUES IN BEVERAGES

The Green colour in food industry is predominantly a combination of Brilliant Blue with Tartrazine or Fast Green (FCF), both having negative side-effects. Kancor brings to the market a wide range of green hues through C-CAPTURE Citrine series. Inspired from the colour of citrus fruits, the Citrine Series offers a range of refreshing yellow-green shades. Chlorophyll, the green pigment present in all plants is responsible for the green colour in nature. It is used as a natural colour additive in processed food. Chlorophyll is extracted from green plants that are dried before solvent extraction. Solvent extraction results in an oil soluble product which is standardised with vegetable oil. Kancor also produces chlorophyll colour emulsions that can mix with water.

Kancor is different from other manufacturers of chlorophyll, because we do not use mulberry leaves. These leaves are associated with bad quality and unhygienic manufacturing processes. Kancor's source of chlorophyll is a green plant called Alfalfa (*Medicago sativa*). We have adopted backward linkage programmes to secure our raw materials. The raw material is handpicked from Kancor approved Alfalfa farms to ensure traceability of the product.

Based on the results of stability studies (such as the one below), Kancor and Mane has been able to uncover a variety of solutions to naturally colour different applications.

## ACCELERATED COLOUR STABILITY STUDY OF CITRINE SERIES IN MILK AND SODA

**OBJECTIVE:** To study Kancor's Citrine series' behaviour to light and pH in two different application media [milk and soda]. The application media represents a pH range of neutral (milk) to acidic (soda).

**METHODOLOGY:** 0.1% solutions of the product in milk and soda were stored for the experimental period in an accelerated light and heat stability study equipment (the Atlas Suntest XLS+).

**Chamber Air Temperature (Cht):** 25<sup>o</sup>C, regulated by Black Standard Temperature (BST)

**Sample:** D000561 [From the Citrine Series]

One day of accelerated test conditions is equivalent to roughly 4 days on the shelf

The solutions were compared with refrigerated controls on a periodic basis. Visual examination by a sensory panel has been used as the method of study.

Material		Citrine Series (D00561) on milk and soda	
Base		Milk	Soda
Initial Observations	Colour	Light green	Green
	Transparency	Cloudy	Clear
Day 4 Observations	Colouration and Fading	o	o
	Precipitation	None	
	Transparency	Cloud	
	Other Observations	Milk started to solidify	-
Day 8 Observations	Colouration and Fading	o	
	Precipitation	None	
	Transparency	Cloud	
	Other Observations	Very slight solidification of milk	-
Day 12 Observations	Colouration and Fading	o	o
	Precipitation	None	None
	Transparency	Cloud	Clear
	Other Observations	-	-
Day 15 Observations	Colouration and Fading	Colour change due to curdling of milk in temperature conditions after day 12	o
	Precipitation	Cloud	None
	Transparency	Cloud	Clear
	Other Observations	Milk products require refrigeration. Control (representative of actual Conditions) is unchanged	No change in product properties

Day 0:



## Day 15: (equivalent to 60 days)



The colour in soda is unaffected for 15 days of the study. The study is an accelerated study of extreme conditions, equivalent to 60 days.

The milk has disintegrated due to the continuous heat – showing a slight difference in shade from the control. In the case of milk, the control is more representative of the actual conditions the milk will be subject to. The slight change in hue is due to the spoiling of milk and not because of the interaction of the colour pigments.

### INFERENCE:

The Citrine series is stable in light as proved in exposure to controlled light and in the neutral to acidic pH.

## RELATED INFORMATION

### Kancolor Stability Studies in Beverages

#### Test conditions and Method Parameters

Equipment: Atlas Suntest XLS+

#### Method Specifications

A. Filter: Daylight - 900-1900W

- Illuminance: 45-130 klx
- 300-400nm: 40-65 W/m<sup>2</sup>
- 340nm: 0.34-0.62 W/m<sup>2</sup>nm
- 420nm: 0.75-1.45 W/m<sup>2</sup>nm
- 300-800nm: 250-765 W/m<sup>2</sup>

B. Chamber Air Temperature (CHT): 25°C,  
regulated by Black Standard Temperature (BST)

C. Phase Length: 4 days]

#### A. Bases

1% Milk, pasteurized

Sprite Lemon-lime Soda

Distilled Water, pasteurized

### Observation Schedule

Day 0 (initial): June 08, 2017

Day 4: June 12, 2017

Day 8: June 16, 2017

Day 15: June 23, 2017 (Final Observations)