Fact Sheet 001

RapiScreen Dairy is proven on a wide range of organisms

The RapiScreen Dairy kit can determine the presence of a wide variety of microbial contaminants in a diverse range of dairy and beverage products. The following organisms have been detected after inoculation at low levels (10 - 100 CFU/sample) into various dairy and beverage products and incubation for 48 hours.

Detection of a wide range of spoilage organisms with the RapiScreen Dairy kit

Microorganism	Classification
Staphylococcus aureus	Aerobic, gram-positive bacteria
Bacillus subtilis *Bacillus cereus*	Aerobic, gram-positive bacteria; Spore former
Escherichia coli *Pseudomonas aeruginosa* *Salmonella* Typhimurium *Gluconacetobacter liquifaciens*	Aerobic, gram-negative bacteria
Clostridium sporogenes	Anaerobic, gram-positive bacteria
Candida albicans *Kluyveromyces lactis* *Saccharomyces cerevisiae* *Saccharomyces kudriavzevii*	Yeast

Inoculated products generated relative light units (RLUs) greater than three times that for a non-inoculated control product.

The RapiScreen Dairy kit has proven effective at detecting a wide range of commonly encountered microorganisms.

Fact Sheet 002

RapiScreen Dairy limit of detection

The limit of detection for the RapiScreen Dairy kit has been demonstrated to be less than 10 organisms per product volume. This has been established by diluting overnight cultures to a theoretical level of less than 10 organisms per inoculum added to a product container. Product containers were then incubated at 30 °C for 48 hours. Inoculum levels were confirmed by spread or pour plates.

The RapiScreen Dairy kit has proven a limit of detection of less than 10 organisms per product volume.

Organism	Inoculum (CFU)	Product	Innovate™ Result
Bacillus subtilis	7	Semi-skimmed Milk Chocolate Milk Coffee Milk Coffee Cream Sweetened Cream Spray Dairy Topping Soymilk, Sweetened Vanilla Custard Chocolate Pudding	Positive
Bacillus cereus	9	Rice Milk Oat Milk, Sweetened Oat Milk, Unsweetened Almond Milk, Sweetened Almond Milk, Unsweetened Cashew Milk, Sweetened Coconut Milk, Sweetened Coconut Milk, Unsweetened Hazelnut Milk	Positive
Escherichia coli	8	Custard	Positive
Pseudomonas aeruginosa	6 8	Soft Serve Mix, Vanilla Soymilk, Sweetened Original Soy Drink	Positive
Clostridium sporogenes	1 2 3	Butterscotch Latte Peppermint Mocha Latte Soy Drink Soy Drink, Strawberry Soy Drink, Coffee Soy Drink, Chai Soy Drink, Cacao Soy Drink, Vanilla Recovery Drink, Vanilla Recovery Drink, Chocolate Pumpkin Spice Latte Nutritional Drink, Vanilla Nutritional Drink, Strawberry	Positive

Data for additional organisms and products are provided in the RapiScreen Dairy Kit Claim Support available at www.hygiena.com/documents.

Fact Sheet 003

ATP depletes non-microbial ATP

Many dairy and beverage products contain high levels of non-microbial ATP that must be reduced in order to accurately detect microbial ATP. The RapiScreen Dairy kit contains the reagent ATX to deplete non-microbial ATP prior to extraction and detection of microbial ATP. A 10-minute ATX treatment reduces background noise (relative light unit values) to a low level, enabling detection of microbial ATP as shown in Figure 1. Table 1 shows stabilized relative light unit baselines for a variety of products with ATX treatment.

Figure 1. Detection of microorganisms after depletion of non-microbial ATP

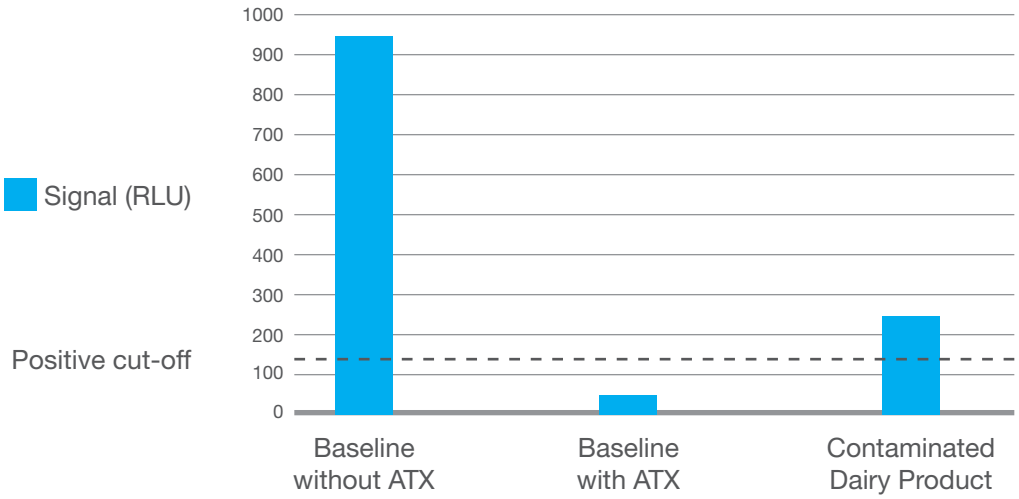

Table 1. ATX treatment of a variety of dairy products

Product	No ATX Treatment (RLU)	10-min ATX Treatment (RLU)
Semi-skimmed Milk	30	6
Full Fat Milk	21	4
Flavored Milk	2	2
Flavored Cream	1	2
Chocolate Milk	1	2
Cream	137	41
Sweetened Cream	150	23
Spray Cream	92	9
Milkshake Mix	192	15
Rice Milk	34	1
Soy Milk	871	3
Custard Pudding	576	2
Soft Serve Mix, Vanilla	1,024	48
Half and Half Coffee Creamer	351	6
Soy Drink	64	4

The RapiScreen Dairy kit depletes non-microbial ATP effectively, allowing sensitive detection of microorganisms.

Fact Sheet 004

RapiScreen Dairy is proven on a wide range of products

The RapiScreen Dairy kit has been shown to detect microbial contamination successfully in a wide range of dairy and beverage products from a large number of manufacturers worldwide. Products are generally assessed for suitability in terms of depletion of non-microbial ATP and the effect of the product on the bioluminescence signal. The ability of the products to support microbial growth is also assessed by inoculating low levels of selected microorganisms, incubating and subsequent testing by the Innovate method.

Examples of products tested with the RapiScreen Dairy Kit

Products		
Semi-skim Milk	Soymilk, Sweetened Original	Peppermint Mocha Latte
Semi-skim Milk, 1.5% Fat	Soymilk, Sweetened Vanilla	Pumpkin Spice Latte
Semi-skim Milk, Sweetened	Soymilk, Unsweetened	Soy Drink
Full-fat Milk	Rice Milk	Soy Drink, Cacao
Chocolate Milk	Rice Drink, Low-fat Vanilla	Soy Drink, Chai
Sweetened Cream	Beef Broth	Soy Drink, Coffee
Soft Serve Mix, Vanilla	Apple Juice	Soy Drink, Strawberry
Spray Dairy Topping	Lemon Juice	Soy Drink, Vanilla
Bechamel Sauce	Orange Juice	Soy Energy Drink, Chocolate
Custard	Peach Juice	Nutritional Drink, Chocolate
Chocolate Pudding	Pear Juice	Nutritional Drink, Strawberry
Almond Milk, Unsweetened	Red Tea	Nutritional Drink, Vanilla
Almond Milk, Sweetened	Green Tea	Protein Drink, Blueberries & Cream
Coconut Milk	Milk Tea	Protein Drink, Banana
Coconut Milk, Unsweetened	Coffee Milk	Protein Drink, Chocolate
Hazelnut Milk	Coffee Cream	Protein Drink, Vanilla
Oat Milk, Sweetened	Half and Half Coffee Creamer	Recovery Drink, Chocolate
Oat Milk, Unsweetened	Butterscotch Latte	Recovery Drink, Strawberry
Oat Milk, Unsweetened Vanilla	Mocha Latte	Recovery Drink, Vanilla