



Washington Red Raspberry Research Monograph

The Rapidly Changing Dairy Market

A quick look at the nation's dairy product introductions during the past year finds red raspberries among the most successful and innovative new launches. From drinkable kids' yogurt to super-premium ice creams, red raspberries are providing manufacturers a versatile ingredient with a decidedly healthy, upscale image. With U.S. red raspberry production at record levels the past year, manufacturers are easily finding ways to incorporate this attractive ingredient into their new product developments.

The wide variety of methods available to manufacturers to incorporate red raspberries into products has also spurred their use (see sidebar). With a variety of puree, juice concentrate and IQF forms available, red raspberries can be blended with other ingredients, used as fillings or can be added whole to ice creams, beverages, yogurts and other dairy-based products.

All-natural, health and nutrition continue to dominate the most successful developments in the dairy sector. Yogurt's acceptance continues to grow, particularly in the child and infant products sector, as a way to deliver beneficial ingredients. The naturally healthy image and appeal that dairy products have makes them a logical carrier of fruit flavors, vitamins, minerals and herbs in fortified beverages.



Block Frozen Red Raspberries

Block frozen red raspberries are frozen in their own juice.

Individually Quick Frozen (IQF) Red Raspberries

"Individual" raspberries are frozen in a quick freeze tunnel or on trays.

Frozen Red Raspberry Puree

Red raspberry puree is produced by passing cleaned and sorted berries through a sieve to achieve a consistent particle size.

Red Raspberry Concentrate

Concentrate is an intense capture of both red raspberry essence and form.

Healthy Beverages

As the functional beverage market continues its double-digit growth, the dairy industry has been able to latch on to the rise and offer numerous products in the same niche. Drinkable yogurt beverages are a standout among the healthy dairy beverages being offered today, but there is still an exceptional amount of new product development that can occur if dairy manufacturers continue to capitalize on existing product trends. Where soy beverage makers have excelled, dairy manufacturers need to lead. Smoothies, shakes and other functional drinks have been dominated by soy protein-based beverages, but the dairy industry could certainly be taking advantage of the opportunities present. Most of the new functional dairy beverages are still relatively mainstream, such as fortified milk beverages. Blended fruit drinks, high protein beverages and mood-enhancing herb drinks can move the dairy industry away from simply offering flavored milks and into an entirely new category. The dairy industry should be leading in the development of new healthy, functional beverages, and blends with red



Manufacture Protocol: Liquid Yogurt Drink

Base composition:

1% milkfat milk
2% additional milk solids nonfat
10% cane or beet sugar

Processing:

Batch: 180-190°F for 10-20 min
Continuous: 190-200°F for 5 min

Process:

1. Prepare base composition.
2. Process at indicated time and temperature.
3. Homogenize at 2500 psi (2000 first stage + 500 second stage).
4. Cool to 115°F.
5. Inoculate with yogurt culture (*Str. thermophilus*, *L. bulgaricus*).
6. Incubate at 115°F to pH 4.8.
7. Break coagulum and cool to 85°F to slow acid development.
8. Homogenize at low pressure (~1000 psi) to remove graininess and disperse lumps.
9. Add 7.5% 65°Brix Red Raspberry Juice concentrate.
10. Add cold dispersible guar gum to increase viscosity, as needed.
11. Package.
12. Cool to ~40°F.
13. Shelf life 2-3 weeks.

raspberries and other fruits would certainly help position dairy products as market leaders.

Formulating yogurt drinks

Cultured dairy beverages vary in viscosity. Thicker products resemble cup yogurt and are perceived as more filling. Thinner drinks tend to be lighter and more refreshing.

The red raspberry drinkable yogurt products developed at the University of Wisconsin-Madison use a plain cultured milk base, after shearing it, a stabilizer is added, along with

red raspberry juice concentrate, flavors and sweetener. These products maintain a smooth mouthfeel and texture, with a distinct red raspberry flavor but no identifiable fruit. This increases the consumer perception and acceptability of the product.

Some drinkable yogurts are manufactured as a single fermented product with flavoring added post-fermentation. With these formulas, probably the biggest issue is how to prevent protein separation since they usually have lower solids concentrations. Viscosity-producing cultures can assist in formulating these products. These cultures produce some thickness without being slimy or forming tight gels. Proper final pH is important since highly acid products coagulate more of the casein and whey protein and can create particles. Careful selection of stabilizers and other solids are also part of the equation, as is proper equipment selection.

Some cultured dairy beverages such as kefir require cultures that provide effervescence. With fruit juice/yogurt blend drinks, a high-shear device is typically used to blend the yogurt with the juice. Texture development by the culture is not typically a factor in these products since the mechanical shear used in mixing destroys the stabilization produced by the culture.

Manufacture Protocol: Flavored Milk Drink

Base composition:

2% milkfat milk
2% additional milk solids nonfat
9% cane or beet sugar

Processing:

Batch: 150-155°F for 30 min
Continuous: 170-175°F for 18+ sec

Process:

1. Prepare base composition.
2. Process at indicated time and temperature.
3. Homogenize at 2500 psi (2000 first stage + 500 second stage).
4. Cool to <45°F.
5. Add 7.5% 65° Brix Red Raspberry Juice concentrate.
6. Add cold dispersible guar gum to increase viscosity, as needed.
7. Package.
8. Cool to ~40°F.
9. Shelf life 2-3 weeks.

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