**A SHORT ARTICLE ABOUT DEXTRAN AND ITS EFFECTS ON THE SUGAR INDUSTRY**

**Dextran** is a complex, branched glucan polysaccharide made of many glucose molecules composed of chains of varying lengths. The straight chain consists of α-1,6 glycosidic linkages between glucose molecules, while branches begin from α-1,4 linkages (and in some cases, α-1,2 and α-1,3 linkages as well).

Dextran is synthesized from sucrose by certain lactic-acid bacteria, the best-known being *Leuconostoc mesenteroides* and *Streptococcus mutans*.

**THE FIELD**

Most dextran is built up after harvest due to a variety of avoidable reasons:

- Long waiting time between harvest and crushing in the mill
- Wet and hot climate conditions
- Exposure to dirt and mud
- Burning of cane fields notably aggravates the phenomenon
- Billeted cane is more affected than wholestick cane

**THE MILL/FACTORY**

Effects of dextran on factory performance:

- Sugar recovery
  - direct loss due to metabolism (<1%)
  - loss due to dextran mediated juice impurity
  - loss due to reduced growth of crystals
- Clarification, filtration & throughput
  - suspended matter may be carried over to juice due to dextran's function as protective colloid
- Raw sugar quality
  - false increased polarization readings due to dextran
  - reduced filterability of raw sugar
  - buildup of dextran in raw sugar causes carry over to the refinery

**THE REFINERY**

Since dextran accumulates in raw sugar to a huge extent (see graph) the problems described are carried on to the refinery.

Drying of sugar is slowed by increased levels of dextran. The stickiness of moist sugar makes it more challenging to package.

**THE F&B INDUSTRY**

Dextran contamination in incoming sugar causes a variety of problems for the sugar processing industry:

- Flocking in alcoholic and acidic beverages
- Distortion of hard candy

As a result, sugar purchasers are increasingly demanding low dextran thresholds.

**THE CONCLUSION**

- Dextran causes severe economic damage along the entire value chain of production and processing
- The basis for all prevention strategies is to assess the level of contamination at all links of the chain
- Countermeasures to prevent dextran contamination are available