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## Mannitol Production Process

### Partnering Opportunity

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#### About zuChem

zuChem is a biotechnology company specializing in the development of proprietary bioprocesses for the production of unique carbohydrates and glycochemicals for the food and pharmaceutical markets. The Company has offices in Chicago, Illinois as well as research facilities in Peoria, Illinois.

zuChem has collaborated with the U.S. Department of Agriculture's National Center for Agriculture Utilization Research (NCAUR) to develop and optimize a proprietary fermentation process to produce mannitol from an inexpensive fructose/glucose feedstock such as HFCS.

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#### The Mannitol Market Opportunity

Mannitol is a naturally occurring sugar polyol that has a sweetening property matching that of sucrose, but contributes fewer calories. As the trend to sugar-free gum has increased, mannitol has increasingly been used as a key sweetener. It is also used extensively in a variety of confectionary products where its unique non-hygroscopic properties allow it to be used to coat products such as candies and gums. Confectionary applications are expected to continue to be the primary market opportunity in coming years.

Pharmaceutical grade mannitol is also used as an excipient to formulate pharmaceutical products as well as an osmotherapeutic in kidney, cardiac, and brain surgery and a bulking agent for tableting applications.

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#### The zuChem/NCAUR Process

Currently mannitol is produced via the chemical hydrogenation of pure, and comparatively expensive, fructose. The chemical hydrogenation process, though inexpensive, yields a mixture of sorbitol and mannitol which are relatively difficult and costly to separate.

zuChem and NCAUR have developed a fermentation process for the production of mannitol from a mixed C-6 sugar source such as High Fructose Corn Syrup (HFCS) using a proprietary non-GMO strain of *Lactobacillus*. The process is capable of producing pure mannitol without contaminating sorbitol or other polyols, thereby offering significant cost advantages at both the raw material and purification stages. The production process has been approved by the FDA and scaled to pilot level. The process is protected by a variety of patents and patent applications currently pending worldwide.

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#### Partnership Opportunities

zuChem is seeking strategic manufacturing partners with large scale microbial fermentation capabilities (50,000 liter scale or greater) interested in producing mannitol for customers in the food ingredients industry.

For further information, please contact:

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