BUSINESS CONSULTANTS

REB M TECHNO-ECONOMIC ANALYSIS

Prepared by:

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STRATEGIES TO GROW YOUR BUSINESS

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REB M TECHNO-ECONOMIC ANALYSIS

INTRODUCTION

In this case study, CPL Business Consultants was engaged by a global manufacturing company to carry out a techno-economic analysis for reb M (rebaudioside M) produced by bioconversion and fermentation. CPL's detailed technical report and spreadsheet model delivered authentic insights into the economics of reb M production, the manufacturer landscape, pricing dynamics and cost drivers.

Rebaudioside M (reb M) is a naturally occurring steviol glycoside which is found in at low concentrations in dried stevia leaves and is 200–350 times sweeter than sucrose. Reb M can be produced by extraction and purification, bioconversion and fermentation. CPL modelled the economics of rebaudioside M production by biotransformation and fermentation of different inputs, estimating the current costs, how these might change with optimisation and the theoretical limit for lowering the Cost of Goods Sold (COGS).

The comprehensive report contained a detailed technical description of the Reb M production processes and parameters, the main players and technology partners, and an economic model based on current, potential and theoretical production parameters. The report and model were based on a wide range of scientific and technical sources which included desk-based research and expert interviews with industry players from CPL's extensive network.

The model included an interactive sensitivity analysis dashboard where key parameters (e.g. capacity, labour, enzymes, energy) could be adjusted, to see the effect on the potential price of the product and profitability for the ingredient manufacturer. An outline of the report and spreadsheet model is shown below.

REB M TECHNO-ECONOMIC ANALYSIS REPORT OUTLINE

Production Processes

- Enzymatic Bioconversion Processes
- Fermentation Pathways

Reb M Players

- Manufacturers of Reb M
  - Production Details e.g.
    - Facility Location
    - Facility CAPEX
    - Production Capacity
  - Reb M Process details e.g.
    - Bioconversion or Fermentation Process
    - Raw Materials Used as Starting Point
    - Organisms, Enzymes and Co-factors
  - Financial Details e.g.
    - Revenue

        - Gross Margin
        - Other Costs (e.g. Licencing)
    - Rebaudioside M Technology Partners
        - Biotechnology and Enzyme Development Companies
        - Toll Manufacturers

Reb M Techno-Economic Analysis Model

- Costing Scenarios
    - Current
    - Potential
    - Theoretical
- Assumptions
    - Capital Costs e.g.
        - Scale of Reb M Operation
        - Plant Investment
        - Labour
    - Licencing and Royalties e.g.
        - Licencing Payments
        - Royalty Payments
    - Reb M Operating Costs e.g.
        - Raw Materials
        - Bioconversion or Fermentation
        - Downstream Processing
    - Other Expenses
- Calculations (Tables and Charts)
    - COGS
        - Cost of Goods Sold for Rebaudioside M Per Batch/Per Kg
        - COGS after Royalty & License + Depreciation ($/kg)
    - Income Statement
        - Revenues, Gross Profit, EBITDA & EBIT
    - Sensitivity Analysis
        - Effects of Changing Key Parameters on Reb M Cost (Interactive Graphs and Tables)
    - Graphs e.g.
        - Sensitivity Analysis
        - COGS and Price Stack for Reb M
        - COGS vs Substrate Price

In addition to this Reb M (Rebaudioside M) Techno-Economic Analysis project, CPL Business Consultants has also worked on a numerous projects on Sugars & Sweeteners including Natural Sweeteners Including Stevia and Lo Han Guo, Erythritol & Stevia Markets and Uses, Allulose, Xylitol and Isomaltooligosaccharides. Have a look at our PowerPoint Introduction and Brochure describing deliverables, differentiators and case studies. You can also review Eight case studies.