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### 3.9 Phenylalanine – Market Outlook

## 4. Competitor Dynamics

### 4.1 Major Global Companies in Phenylalanine Market



Ajinomoto Co., Inc (Japan)

CJ Cheil Jedang (South Korea)

Kyowa Hakko Bio Co., Ltd. (Japan)

Maidan Biology (China)

WuxiJinghai Amino Acid Co., Ltd. (China)

More.....

4.2 Major Global Distributors in Phenylalanine Market

4.3 Major Activities in Phenylalanine Market

5. PRODUCT TECHNOLOGY/RESEARCH

5.1 Introduction - Amino Acids

Code Symbols of Amino Acids

Amino Acid Structure

Enantiomers

Essential and Non-essential Amino Acids

Synthesis of Essential Amino Acids

Synthesis of Non-Essential Amino Acids

Exhibit 189. List of Amino Acids by Production Process

Phenylalanine

Introduction

Overview

Definition

Source

Significance of Phenylalanine

Deficiency

Phenylketonuria

Side Effects

Dosage and Cautions

Precautions and Warnings

Safety Issues

Metabolism

Benefits

Phenylalanine and Weight Loss

Functions

Production Process

Fermentative Process

Chemical Synthesis

5.2 Phenylalanine Types

L-Phenylalanine and its Derivatives

D-Phenylalanine and its Derivatives

DL Phenylalanine

5.3 Phenylalanine Applications

Phenylalanine - Uses

Phenylalanine in Medicinal Fields

DOPA

Depression

Pain

Attention Deficit Disorder

Multiple Sclerosis

Parkinson's Disease

Rheumatoid Arthritis

Vitiligo

Phenylalanine as Nutritional Supplement

Phenylalanine as a Artificial Sweetner

Aspartame

Cell Culture Reagent

Feed Additive

Agrochemical

5.4 Phenylalanine – Research Briefs

Prebiotic dairy protein promotes digestive health, holds therapeutic promise

Supplement cuts muscle loss in knee replacements

More.....

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7. PATENTS