

# Single-Substance Nutraceuticals

WITH SAFETY & TOXICITY DATA PLUS LICENSING &  
OTHER BUSINESS OPPORTUNITIES

FOURTH EDITION





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## THE REPORT

A great deal of current research is focused on traditional herbal extracts. Investigators are examining claims linking these extracts with health enhancement and prevention of chronic diseases. At least in part, this represents an effort to legitimize homeopathic remedies and Eastern medicine. Additionally, it seeks to provide patients and physicians with much-needed safety and efficacy data.

The explosive demand growth for bioactive ingredients for nutraceuticals and functional foods is being driven by frequently cited health concerns:

- Cardiovascular disease
- Breast, skin, colorectal, and brain cancers
- Female health concerns
- CNS disorders
- Metabolism management
- Gastrointestinal disorders
- Immunomodulation

Of the thousands of intriguing bioactive compounds with potential health-enhancing effects on human metabolism, twelve major groups of compounds have emerged. A significant problem with the use of nutraceuticals in treating diseases is the lack of serious studies published with clear clinical evidence. TCI has published ***Single-Substance Nutraceuticals*** to address these concerns.

***Single-Substance Nutraceuticals*** has over 330 pages of analysis and opportunities. This industry study outlines and describes the most important aspects of current research and features descriptions of more than 110 emerging bioactive compounds and related technologies under development from companies, universities, and research organizations. The report contains the technical and market information needed for research and development, business development and licensing professionals to make timely product development and licensing decisions.

***Single-Substance Nutraceuticals*** identifies new technological advancements of bioactive compounds in nutraceuticals with:

- Clinical evidence to validate proof-of-concept and establish safety claims
- Natural derivatives extracted from edible plant material
- Actives showing biological activity to improve some functionality
- Measurable performance benefit

# KEY INFORMATION AND ANALYSIS PRESENTED IN THE REPORT:

## Executive Summary

### Introduction

#### I. Nutraceuticals Market Analysis

Global Nutraceutical Markets  
Cardiovascular Market Segment

#### II. Drivers for Emerging Health Ingredients

Oncology  
Cardiovascular Disease  
Female Health  
Central Nervous System  
Metabolism  
Gastrointestinal Disorders  
Immunomodulation

#### III. Clinical Studies To Support Product Claims

Saw Palmetto	Anthocyanins
Vinpocetine	Proanthocyanidins
Resveratrol	Ginseng
Quercetin	Ginkgo Biloba
Green Tea Extract	Genistein
Astaxanthin	Creatine

#### IV. “Bioprospecting” for Novel Health Ingredients

NIH Dietary Supplement Research Centers:  
Botanicals

- UIC Center for Botanical Dietary Supplement Research in Women’s Health
- UCLA Center for Dietary Supplements Research: Botanicals
- Purdue-UAB Botanicals Research Center for Age Related Diseases
- Arizona Center for Phytomedicine Research
- MU Center for Phynutrient and Phytochemical Studies

Overview of NCCAM Research Centers

- University of The Southern Cross – Center for Phytochemistry
- National Center for the Development of Natural Products
- The Royal Botanical Gardens, Kew

#### V. Bioactive Ingredient Frontier

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*Figure 5:* 2001 Sales of Cardiovascular Functional Foods by Region



## ABOUT TCI

Technology Catalysts International, founded in 1979, is a full service strategic alliance consultancy specializing in technical and business research in pharmaceuticals, life sciences, fine chemicals, and advanced materials and processes.

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# Business Opportunities

## CANCER

- Amphinidin: A Extract as Anticancer Agent
- Apigenin, an Anti-Cancer Agent
- Aromatase Inhibitors from *Broussonetia Papyrifera*
- Astaxanthin for the Treatment of Cancer
- Bioactive Ingredients for the Treatment of Cancer
- Canadian Willowherb Extracts
- Conophylline III-121C Isolated from *Ervatamia Microphylla*
- Curcumin, an Immunosuppressant With Anticancer Activities
- Extract from Plants in Dormancy that Slows Cell Proliferation
- Ginger Extracts with Anti-tumor, Anti-inflammatory, and Antioxidant Activity
- Irofulven Natural Sesquiterpene Derivative for Oncology
- Kolavenol Isolate for the Treatment of Cancer
- Lectin Extracts from Mushroom as Anticancer Agent
- Lunasin Polypeptide as a Nutraceutical
- Lutein: a Single-Substance Extract from Marigolds for Chemoprevention
- Natural Bergamot Oil as a Skin Cancer Protectant
- Natural Biologically-Active Compounds as Cancer Chemopreventive Agents
- Natural Extract (Betulinic Acid) from Birch Bark for Treating Melanoma
- Natural Product Derivatives for Carcinogenesis Inhibitor
- Novel Bioactive Compound with Bowman-Birk Inhibitor Activity
- Novel Rhodocyanine Dye with Antitumor Activity
- Oenothelin B, an Anti-Tumor Agent
- Pervilleine Compounds for Modulation of Multidrug-Resistance Phenotype
- Polymethoxylated Flavones as Anti-Tumor Agents
- Pseudolaric Acid B for Scabies, Fungal Skin Infections and Mycoses
- *Scutellaria Barbatae* Therapy for Metastatic Breast Cancer
- Tubulin Polymerization Inhibitor
- Withaferin A, an Anticancer Agent
- Woodfruticosin Topoisomerase Inhibitor Isolated from *Woodfordia fruticosa* Kurz
- Zeaxanthin Extract for Potential Antitumor Bioactivity

## CARDIOVASCULAR DISEASE

- Antioxidant Compounds from *Ajuga reptans* Plant Extracts
- Antioxidant Preparation from Naturally-Occurring Plant Materials
- Bixa Orellana By-products as Potential Antioxidant Compounds
- BRB-I-28 for Use in the Treatment of Arrhythmias
- Cinnamic Acid Derivative for Preventing Elevated Blood Lipid Levels
- *Eugenia uniflora* Bioactives for Cardiovascular Disorders

- Evodiamine Isolated from *Evodiae Fructos*, a Potent Cardiostimulant
- Flavopine, an Extract with Antioxidant Properties
- Ginkgo Biloba Extract: an Antioxidant Free-Radical Scavenger
- Hopanoids with Anti-Inflammatory Properties
- Hydroxymatairesiol (HM 3000), a Potent Antioxidant
- Natural Compounds for Cholesterol Lowering Effects
- Natural Plant Derivative for Cardiovascular Disorders
- Novel Antioxidant Agents from Molecular Combinations of Vitamin C and Vitamin E
- Novel Bioflavonoid/Polyphenolic Extracts with Antioxidant and Anti-hypertension Properties
- Novel Cholesterol-Lowering Agent
- Phytrol, a Cholesterol Antagonist
- Pycnogenol for use in Hypertension
- Soy-Based Fiber Extract with Cholesterol-Lowering Properties
- Trilinolein For Treating Cardiovascular Disorders

## FEMALE HEALTH

- *Cimicifuga Racemosa* Clinical Trials for Female Health
- Dietary Phytoestrogens for Osteoporosis
- Herbal Formulation for Obstetric and Gynecological Disorders
- Pomegranate Extract for Female Health Indications
- Rimostil, an Estrogen Agonist
- *Trifolium Pratense* Clinical Trials for Female Health
- Ultrapure Sage and Red Clover Extracts with AntiInflammatory and Antioxidant Activities

## CENTRAL NERVOUS SYSTEM

- Lactalbumin Extract for CNS Disorders
- Bioactive Compounds for Improving Cognitive Functions
- Calagualine Extract for Treating Cognition Disorders
- *Curcuma Longa* Extract for Treating Alzheimer's Disease
- Feverfew Derivative for the Prevention of Migraine Symptoms
- Gaultherin, Safe and Natural Alternative to Aspirin
- Hypericum for the Treatment of Depression
- Isoflavonoids For Treatment of Alzheimer's Disease and Reduced Cognitive Functions
- Molecule with Anti-Parkinsonian Activity
- Natural Derivative for Alzheimer's Disease
- Phosphatidylcholine Derivative for Neurological Disorders
- *Sceletium Tortuosum* for Anti-depressive/Anxiety States
- Sedative Preparation from Valerian – New/Improved
- Soy-Derived Isoflavones for the Treatment of Neurological Symptoms
- Treating Various Psychotropic Effects

## METABOLISM

- Appetite-Suppressing Peptide
- Duckweed Extracts for Treating Iron-Deficiency Anemia
- Extracts of *Pycnanthus angolensis* for Nutraceuticals
- High Purity Piperine for Nutritional Use
- Insulin Potentiating Compounds from Cinnamon
- Phytonutrient for use in Promoting Lean Body Mass and in the Management of Mood Disorders
- Pinitol for Controlling Hypoglycemia
- Proteinase Inhibitor for Satiety Control
- Pure K-Casein Macropeptide for Metabolic Regulation
- Reverse CCK Peptides for Satiety Control
- *Sutherlandia Frutescens* for Improving Weight in Infections and Cancers
- Weight Loss Product

## GASTROINTESTINAL DISORDERS

- Cox-II Inhibitor Natural NSAID for Irritable Bowel Syndrome, Third Generation
- Crofelemer, an Antiviral Compound for Controlling Diarrhea
- Naturally-Derived Fractions for Treating Prostate Problems
- Plant-Derived Lectin for Nutraceuticals
- Prebiotic that can Ease Digestive Discomfort
- Quality-Controlled Extract for Treatment of Gastrointestinal Disorders
- Scopadulciol, a Naturally-Derived Antiviral Compound

## IMMUNOMODULATION

- Basidiomycetes Mushroom Derivatives with Anti-cholesterol and Anti-diabetic Qualities
- Bioactive Compound Effective Against Viral Conditions
- Bioactive Quinone-Methide Triterpenoids with Antibacterial and Cytotoxic Activity
- Black Elderberry Extract with Anti-Viral Therapeutic Properties
- Castanospermine for use in Diabetes Mellitus
- Cistifolin, an Integrin Antagonist
- Conocurvone Isolated from Smokebush is a Single Antiviral Compound
- Flavonoid Compound for Treatment of the Common Cold
- Immunomodulatory Polysaccharides from Aloe
- Ingredient for Herpes Simplex Virus
- Nanoscalar Beta-Glucans with Antiviral Properties
- Non-Toxic *Larrea Tridentata* Extract with Anti-inflammatory and Antiviral Activity
- Novel Sphingolipids with Anti-Inflammatory and Anti-Cancer Properties
- NSAID Natural Food Supplement for Canine Arthritis
- NSAID Oral Treatment for Canine Atopic Dermatitis
- Picroliv, a Hepatoprotective Agent
- Quercetin, an Antioxidant Flavonoid
- Sesquiterpene Lactones for Treatment of Inflammatory Disorders
- Triterpene from European Plane Tree Bark Nutraceutical



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Ajay Rastogi  
Vice President  
Technology Catalysts International  
605 Park Avenue  
Falls Church, VA 22046, U.S.A.  
Telephone: (703) 531-0257 • Fax: (703) 237-7967  
E-mail: arastogi@technology-catalysts.com

