# *Sentra PM* ® *PRODUCT INFORMATION*

*Sentra PM* capsules by oral administration. A specially formulated Medical Food product, consisting of a proprietary formulation of amino acids and polyphenol ingredients in specific proportions, for the dietary management of the metabolic processes associated with sleep disorders. (SD).
Must be administered under physician supervision.

## Medical Foods

Medical Food products are often used in hospitals (e.g., for burn victims or kidney dialysis patients) and outside of a hospital setting under a physician's care for the dietary management of diseases in patients with particular, unique or distinctive medical or metabolic needs due to their disease or condition. Congress defined "Medical Food" in the Orphan Drug Act and Amendments of 1988 as "a food which is formulated to be consumed or administered enterally [or orally] under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation." Medical Foods are complex formulated products, requiring sophisticated and exacting technology, and that are used only for a patient receiving active and ongoing medical supervision wherein the patient requires medical care on a recurring basis for, among other things, instructions on the use of the medical food. *Sentra PM* has been developed, manufactured, and labeled in accordance with both the statutory definition of a Medical Food and FDA's regulatory labeling guidelines. *Sentra PM* must be used while the patient is under the ongoing care of a physician.

## SLEEP DISORDERS (SD)

### SD as a Metabolic Deficiency Disease

A critical component of the definition of a Medical Food is that the product must address the distinct nutritional requirements of a particular disease or condition. FDA scientists have proposed a physiologic definition of distinctive nutritional requirements as follows: "the dietary management of patients with specific diseases requires, in some instances, the ability to meet nutritional requirements that differ substantially from the needs of healthy persons. For example, in establishing the recommended dietary allowances for the general, healthy population, the Food and Nutrition Board of the Institute of Medicine National Academy of Sciences recognized that different or distinctive physiologic requirements may exist for certain persons with "special nutritional needs arising from metabolic disorders, chronic diseases, injuries, premature birth, other medical conditions and drug therapies. Thus, the distinctive nutritional needs associated with a disease reflect the total amount needed by a healthy person to support life or maintain homeostasis, adjusted for the distinctive changes in the nutritional needs of the patient as a result of the effects of the disease process on absorption, metabolism, and excretion." It was also proposed that in patients with certain disease states who respond to nutritional therapies, a physiologic deficiency of the nutrient is assumed to exist. For example, if a patient with a sleep disorder responds to a tryptophan formulation by improving the duration and quality of sleep, an increased physiological requirement for tryptophan is assumed to exist.

Patients with sleep disorders are known to have increased nutritional requirements for tryptophan, choline, flavonoids, and certain antioxidants. Patients with sleep disorders frequently exhibit reduced plasma levels of tryptophan and have been shown to respond to oral administration of tryptophan or a 5-hydroxytryptophan formulation. Research has shown that tryptophan reduced diets result in a fall in circulating tryptophan. Patients with sleep disorders frequently experience activation of the tryptophan degradation pathway that increases the turnover rate of tryptophan leading to a reduced level of production of serotonin for a given tryptophan blood level. Research has also shown that a genetic predisposition to accelerated tryptophan degradation can lead to increased tryptophan requirements in certain patients with sleep disorders.

Choline is required to fully potentiate acetylcholine synthesis by brain neurons. A deficiency of choline leads to reduced acetylcholine production by the neurons. Flavonoids potentiate the production of acetylcholine by the neurons thereby inducing REM sleep. Diets deficient in flavonoid rich foods result in inadequate flavonoid concentrations, impeding acetylcholine production in certain patients with sleep disorders. Provision of tryptophan, choline, and flavonoids with antioxidants, in specific proportions can restore the production of beneficial serotonin and acetylcholine, thereby improving the duration and quality of sleep and reducing the number of awakenings during the night.

## PRODUCT DESCRIPTION

### Primary Ingredients

*Sentra PM* consists of a proprietary formulation of Choline Bitartrate, Theobromine, Glutamic Acid, Acetyl L-Carnitine HCL, Whey Protein, Dextrose, Ginkgo Biloba, Hawthorne Berry, and Griffonia Seed in specific proportions. These ingredients fall into the classification of Generally Recognized as Safe (GRAS) as defined by the Food and Drug Administration (FDA) (Sections 201(s) and 409 of the Federal Food, Drug, and Cosmetic Act). A GRAS substance is distinguished from a food additive on the basis of the common knowledge about the safety of the substance for its intended use. The standard for an ingredient to achieve GRAS status requires not only technical demonstration of non-toxicity and safety, but also general recognition of safety through widespread usage and agreement of that safety by experts in the field. Many ingredients have been determined by the FDA to be GRAS, and are listed as such by regulation, in Volume 21 Code of Federal Regulations (CFR) Sections 182, 184, and 186.

### Amino Acids

Amino Acids are the building blocks of protein and are GRAS listed as they have been safely ingested by humans for thousands of years. The formulations of the amino acids in *Sentra PM* are equivalent to those found in the usual human diet. Patients with sleep disorders may require an increased amount of certain amino acids that cannot be obtained from normal diet alone. Tryptophan, for example, is an obligatory amino acid. The body cannot make tryptophan and must obtain tryptophan from the diet. Tryptophan is needed to produce serotonin. Serotonin is required to induce sleep. Patients with sleep disorders have altered serotonin metabolism. Some patients with sleep disorders have a resistance to the use of tryptophan that is similar to the mechanism found in insulin resistance that is genetically determined. Patients with sleep disorders cannot acquire sufficient tryptophan from the diet to establish normal sleep architecture without ingesting a prohibitively large amount of calories, particularly calories from protein.

### Flavonoids

Flavonoids are a group of phytochemical compounds found in all vascular plants including fruits and vegetables. They are a part of a larger class of compounds known as polyphenols. Many of the therapeutic or health benefits of colored fruits and vegetables, cocoa, red wine, and green tea are directly related to their flavonoid content. The specially formulated flavonoids found in *Sentra PM* cannot be obtained from conventional foods in the necessary proportions to elicit a therapeutic response.

### Other Ingredients

*Sentra PM* contains the following "inactive" or other ingredients, as fillers, excipients, and colorings: Gelatin, Tricalcium Phosphate, Silicon Dioxide, Vegetable Magnesium Stearate, Cellulose.

### Physical Description

*Sentra PM* is a yellow to light brown powder. *Sentra PM* contains Choline Bitartrate, Cocoa, L-Glutamic Acid, Acetyl L-Carnitine HCL, Dextrose, Ginkgo Biloba, Hawthorne Berry and Griffonia Seed Extract (95% 5-HTP).

## CLINICAL PHARMACOLOGY

### Mechanism of Action
*Sentra PM* acts by restoring and maintaining the balance of the neurotransmitters, serotonin and acetylcholine, that are associated with sleep disorders.

### Metabolism
The amino acids in *Sentra PM* are primarily absorbed by the stomach and small intestines. All cells metabolize the amino acids in *Sentra PM.* Circulating tryptophan and choline blood levels determine the production of serotonin and acetylcholine.

### Excretion
*Sentra PM* is not an inhibitor of cytochrome P450 1A2, 2C9, 2C19, 2D6, or 3A4. These isoenzymes are principally responsible for 95% of all detoxification of drugs, with CYP3A4 being responsible for detoxification of roughly 50% of drugs. Amino acids do not appear to have an effect on drug metabolizing enzymes.

## INDICATIONS FOR USE
*Sentra PM* is intended for the clinical dietary management of the metabolic processes of certain sleep disorders.

- Insomnia
- Sleep maintenance insomnia
- Sleep disorders of circadian origin
- Sleep disorders associated with depression
- Snoring

## CLINICAL EXPERIENCE
The administration of *Sentra PM* has demonstrated significant functional improvement in the quality and quantity of sleep when used for the nutritional management of the metabolic processes associated with certain sleep disorders. Administration of *Sentra PM* results in the induction and maintenance of sleep in patients with sleep disorders.

## PRECAUTIONS AND CONTRAINDICATIONS
*Sentra PM* is contraindicated in an extremely small number of patients with hypersensitivity to any of the nutritional components of *Sentra PM.*

## ADVERSE REACTIONS
Ingestion of L-tryptophan, L-arginine or choline at high doses of up to 15 grams daily is generally well tolerated. The most common adverse reactions of higher doses — from 15 to 30 grams daily — are nausea, abdominal cramps, and diarrhea. *Sentra PM* contains less than 1 gram of amino acids per dose however, some patients may experience these symptoms at lower doses. The total combined amount of amino acids in each *Sentra PM* capsule does not exceed 400 mg.

## DRUG INTERACTIONS
*Sentra PM* does not directly influence the pharmacokinetics of prescription drugs. Clinical experience has shown that administration of *Sentra PM* may allow for lowering the dose of co-administered drugs under physician supervision.

## OVERDOSE
There is a negligible risk of overdose with *Sentra PM* as the total amount of amino acids in a one month supply (60 capsules) is less than 20 grams. Overdose symptoms may include diarrhea, weakness, and nausea.

## POST-MARKETING SURVEILLANCE
Post-marketing surveillance has shown no serious adverse reactions. Reported cases of mild rash and itching may have been associated with allergies to *Sentra PM* flavonoid ingredients, including cinnamon, cocoa, ginko biloba and hawthorne berry.

## DOSAGE AND ADMINISTRATION
### Recommended Administration
For the dietary management of the metabolic processes associated with sleep disorders Take (2) capsules daily at bedtime or as directed by physician. An additional dose of one or two capsules may be taken after awakenings during the night. As with most amino acid formulations *Sentra PM* should be taken without food to increase the absorption of key ingredients.

### How Supplied
*Sentra PM* is supplied in clear, size 0 capsules in bottles of 60 capsules.

### Physician Supervision
*Sentra PM* is a Medical Food product available by prescription and may be used per FDA law, and product labeling while patient is under ongoing physician supervision.

### Storage
Store in a cool dry place at temperatures 45-90° F (8-32° C) relative humidity below 50%. *Sentra PM* is supplied in a recyclable plastic bottle with a child-resistant cap.

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Manufactured for:
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