Doctor's BEST® Science-Based Nutrition™

EpiCor®

High Metabolite Immunogen

EpiCor®

60 Vegetarian Capsules

Ingredients per 1 Veggie Cap:

EpiCor® dried yeast fermentate .....500 mg

Excipients: Vegetarian capsule, silicon dioxide, magnesium stearate (vegetarian source)

Suggested Adult Use: Take one capsule daily with or without food.

Suitable for vegetarians.

Ingredients

EpiCor® is an all natural, novel immune-supportive compound that fits into the unique category of being a *high metabolite immunogen*.* EpiCor® is a nutritive dried yeast fermentate that supports cellular metabolism and modulates immune function.* In vitro laboratory data has shown that ***EpiCor***® beneficially influences cellular processes that impact immune health.*

Benefits

EpiCor® is a unique and novel dietary supplement used for support of immune health, with a fascinating history of discovery. In 1943, a company in Cedar Rapids, Iowa called Diamond V Mills, Inc. began manufacturing and selling a fermentation product from the yeast *Saccharomyces cerevisiae*, the same yeast used in bread and beer making. The product was and still is used as an additive for animal feed to help improve digestion as well as overall health in animals. It has been on the market for over 60 years.

Interestingly, when the company became self-insured, they became aware of unusually low rates of illness in employees that worked in the manufacturing plant for this animal product. This led to very low increases in their insurance premiums over the years compared to other companies, saving them quite a lot of money. Hence they began to investigate what might be the cause of the "healthfulness" of the employees at the fermentation plant. This investigation and subsequent research studies led to the formation of a new company called Embria Health Sciences, which now produces ***EpiCor***® as a supplement for humans to support immune system health.[1] Doctor's Best® is proud to now offer the benefits of ***EpiCor***® to its customers.

Beneficial Support of the Immune System and Activation of Natural Killer (NK) Cells in vitro*

A comparison study was performed on blood from 10 fermentation plant workers compared to that from 10 age and gender matched controls. The fermentation plant workers had several immune cell parameters that appeared superior to the control group. These included decreased levels of CD8 cells resulting in significantly increased CD4 to CD8 ratios, significantly improved cytotoxic natural killer (NK) cell activity even though total NK cells were decreased in number, higher killing efficiency of NK cells, significantly increased levels of secretory IgA, increased numbers of ***EpiCor***® specific antibodies, higher levels of red blood cell intracellular glutathione, and significantly lower levels of immune complexes. These results represent benefits on various cellular players of both the specific and innate parts of the immune system.[1,3,4]

NK cells are one of the first lines of defense used by the immune system. An *in vitro* study performed on human cells showed that NK cells were activated after incubation with ***EpiCor***®, as evaluated by expression of the CD69 activation marker. The CD25 marker (IL-2 receptor) was also induced in the NK cells, although to a lesser degree.[1,2] B cell activation was also noted through increased expression of CD80 and CD86 markers.[2] Immediate increases in calcium levels were evident in peripheral blood mononuclear cells after exposure to ***EpiCor***®, suggesting increased activation through calcium regulation.[2]

High Metabolite Immunogen*: Nutrient Make-up

Production of ***EpiCor***® utilizes the common and harmless bakers or brewers yeast *Saccharomyces cerevisiae* in a patented process called MetaGen4™, a multi-stage fermentation and drying process. It differs from other yeast products in that it contains both the yeast itself as well as the metabolites or "nutrilites" formed by the fermentation process, which are present in the media.[1] Together the media containing the metabolites and the yeast are dried to form ***EpiCor***®. Analysis of ***EpiCor***® reveals that it contains a mixture of natural polyphenols, phytosterols, beta-glucans, mannan oligosaccharides, fiber, trace amounts of B vitamins and minerals, as well as a host of other nutritional compounds.[1,2]



Beneficial Antioxidant Activity*

EpiCor® was tested for antioxidant activity in an *in vitro* assay called the Oxygen Radical Absorbance Capacity assay (ORAC). In this assay, ***EpiCor***® was shown to have a total ORAC antioxidant level of 610 micromol TE (tocopherol (vitamin E)

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equivalent) units (ORAC units) per gram dry weight, which soared above other high antioxidant level foods such as cranberries (93 ORAC units per gram dry weight) and blueberries (62 ORAC units per gram dry weight).[1,3,5]

In another study, freshly isolated human neutrophils were treated with ***EpiCor***® followed by the free radical generator hydrogen peroxide. Cells were treated with a dye that fluoresces when attacked by free radicals. Those cells treated with ***EpiCor***® showed decreased fluorescence intensity compared to control cells not treated with ***EpiCor***®, verifying antioxidant activity *in vitro*.[2]

Safety

Numerous safety tests have been conducted on ***EpiCor***®, revealing an extremely safe profile. Animal studies performed by a leading toxicology laboratory showed no indication of any toxic effects of ***EpiCor***®. An acute oral toxicity study on 20 rats showed that the product was safe when given to rats at a single oral dose of 2000 milligrams per kilogram of body weight (equivalent to a human ingesting 280 capsules at once). After 2 weeks the rats showed no clinical symptoms, no deaths, no abnormalities in body weight, and no gross pathological changes. The same safety results were found in a subchronic toxicity study where rats were given up to 1500 milligrams daily for 90 days (equivalent to a human ingesting up to 210 capsules daily for 1.5 years). Again, absolutely no signs or symptoms of toxicity were noted in these animals.[1,3]

In addition, a standard bacterial reverse mutagenicity test (AMES test) as well as a mammalian cell mutation assay using mouse lymphoma cells revealed no evidence of any increase in mutation rates after exposure to ***EpiCor***®. ***EpiCor***® also showed no evidence of mitogenicity (inducing increased cell division) in a human lymphocyte proliferation assay. This suggests that ***EpiCor***® does not cause over-reactivity of cells[1,3].

The effect of ***EpiCor***® on specific liver enzymes CYP1A2 and CYP3A4 (enzymes involved in metabolizing certain drugs and other compounds) was assessed. Immortalized hepatocytes (liver cells) were treated with various concentrations of ***EpiCor***® and compared to both positive and negative controls. ***EpiCor***® did not increase the expression or activity of the liver enzymes, suggesting that it may not affect the metabolism of other substances or medications metabolized by these enzymes if they are taken simultaneously. It also did not appear to be toxic to the cells as measured by lactate dehydrogenase assays and microscopic analysis.[1]

Lastly, ***EpiCor***® was tested for safety in humans in an open label study on 15 adult men and women given a single 500 milligram dose for 30 days. On various days throughout the study vital signs were monitored, and blood and urine samples were analyzed. No clinically relevant abnormal effects on the participants were found[1].

EpiCor® also currently has received self-affirmed Generally Regarded as Safe (GRAS) status by an expert panel that included eminent toxicologists[1].

EpiCor® is a novel compound with an incredibly unique composition that has been shown to enhance immune system function.*

*This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

References

1. Embria Health Sciences (http://www.embriahealth.com/epicor.html)

2. Hart et al. A new Saccharomyces cerevisiae based product has anti-inflammatory effects while specifically activating human NK and B lymphocyte subsets. Unpublished study, personal communication.

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4. Schauss AG, Vodjani A. Discovery of an edible fermentation product with unusual immune enhancing properties in humans. [abstract] FASEB J, 2006; 20(4): A143.

5. Wu X, Beecher GR, Holden JM, Haytowitz DB, Gebhardt SE, Prior RL. Lipophilic and hydrophilic antioxidant capacities of common foods in the United States. J Agric Food Chem 2004 Jun 16;52(12):4026-3

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EpiCor® is a natural immune-supportive compound that fits into the unique category of being a high metabolite immunogen.* EpiCor® is a nutritive dried yeast fermentate that supports cellular metabolism and modulates immune function.* It is derived from the yeast *Saccharomyces cerevisiae*, a non-pathogenic yeast commonly used in baking and brewing. In vitro laboratory data has shown that EpiCor® beneficially influences cellular processes that impact immune health.*

High Metabolite Immunogen that Modulates Immune System Function*

Shown to activate Natural Killer (NK) cells *in vitro**

EpiCor® is a registered trademark of Embria Health Sciences, LLC

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Doctor's BEST®

Science-Based Nutrition™

Dietary Supplement

EPICOR®

High-Metabolite Immunogens

*ENHANCES IMMUNE SYSTEM FUNCTION**

500 mg/60 Veggie Caps

Supplement Facts

Serving Size 1 vegetable capsule
Servings per container 60 servings

Amount per serving	% Daily Value
EpiCor® dried yeast fermentate 500 mg	†

† Daily Value not established.

Other ingredients: Vegetable capsule, silicon dioxide, magnesium stearate (vegetable source).

Suggested adult use: Take 1 capsule daily, with or without food.

Suitable for Vegetarians

CONTAINS NOTHING OTHER THAN LISTED INGREDIENTS

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