### All Natural, Organic, Highly Bioavailable Selenium Yeast

**TYPICAL ANALYSIS:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selenium (Se)</td>
<td>2000-2300 mcg/g</td>
</tr>
<tr>
<td>Protein</td>
<td>45%</td>
</tr>
<tr>
<td>Moisture</td>
<td>6%</td>
</tr>
</tbody>
</table>

**MICROBIOLOGY:**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerobic Plate Count</td>
<td>&lt; 3000 cfu/g</td>
</tr>
<tr>
<td>Yeast &amp; Molds</td>
<td>&lt; 300 cfu/g</td>
</tr>
<tr>
<td>Coliforms</td>
<td>&lt; 0.3 MPN/g</td>
</tr>
<tr>
<td>E. coli</td>
<td>Negative</td>
</tr>
<tr>
<td>Staph. aureus</td>
<td>Negative</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>Negative</td>
</tr>
<tr>
<td>Salmonella spp.</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**HEAVY METALS:**

<table>
<thead>
<tr>
<th>Metal</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (As)</td>
<td>&lt; 1 mcg/g</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>&lt; 1 mcg/g</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>&lt; 1 mcg/g</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>&lt; 1 mcg/g</td>
</tr>
</tbody>
</table>

**PROPERTIES:**

Tan, free-flowing powder; mildly hygroscopic; insoluble in water; 100% will pass through 60 mesh sieve.

**PACKAGING:**

Bulk material is packaged in a 25 kg box double lined with 2 mm polyethylene bags. Other packaging options are available upon request.

**SHELF LIFE:**

2 years when properly stored in original container and kept cool and dry.

*Analytical methods are available upon request.

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**Our Commitment to Excellence**

eXselen was born out of years of research by the expert R&D team at Embria Health Sciences. For over 60 years we’ve been producing high-quality yeast products in the U.S. and guarantee performance and reliability from all of our products.

**Please contact us for more information**

Embria Health Sciences
838 1st Street NW, P.O. Box 2815
Cedar Rapids, Iowa 52406-2815
USA
PHONE 319-362-7421 or 319-EMBRIA1
FAX 319-362-2557
www.embriahealth.com

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A Critical Nutrient for Good Health

The demand for dietary selenium supplements continues to grow among health-conscious consumers for good reason. Selenium is an essential trace mineral the human body is dependent on, yet can’t produce on its own. Selenium must be ingested through diet or supplementation. Adequate levels are absolutely necessary for good health. Research indicates that selenium functions as a potent antioxidant that plays a key role in supporting a healthy immune system.*

A Natural Source

Organic forms of selenium, such as selenium yeast, have been proven to be more effective and safer than inorganic selenium supplements. Because eXselen® is an all-natural, organic selenium yeast processed to yield high levels of selenomethionine, it offers the most bioavailable and safest form of selenium for dietary supplementation on the market today.

Why Yeast?

Yeast cells can incorporate large amounts of selenium into their amino acid pools by substituting selenium for sulfur, a similar element. This “bio activation” process generates selenium-rich proteins, which include various amino acids containing selenium substituted for the normal sulfur including L-selenomethionine (Se-Met). L-selenocystine and amino acid metabolites. Se-Met is the desired endpoint for bioavailability, safety and quality.

Consistently Higher Selenomethionine Levels

Selenomethionine is the essential active compound in high-selenium yeast. Its chemical structure gives it the ability to be stored in muscle tissue. Research indicates that eXselen, with its exceptionally high levels of selenomethionine, elevated selenium content in muscle tissue, liver tissue and blood serum more efficiently than other competitive selenium yeasts. This demonstrates that eXselen is clearly the market leader in terms of bioavailability and efficacy.*

Why choose eXselen?

- Extensive and sophisticated in-house and external analysis
- In-house QC
- Highest SeM content
- Lowest contamination with unknown organic-Se
- Less than 2% inorganic selenium measured
- Each lot number assayed
- High purity – no inorganic salts
- Complete biosynthesis

Simply put, eXselen is one of the finest selenium products on the market for bioavailability, safety and quality.

Bioavailability of eXselen

<table>
<thead>
<tr>
<th>Selenium source</th>
<th>Serum Relative recovery</th>
<th>Liver Relative recovery</th>
<th>Muscle Relative recovery</th>
<th>GSH-Px Relative recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>eXselen</td>
<td>2.0X</td>
<td>2.06X</td>
<td>12.8X</td>
<td>1.63X</td>
</tr>
<tr>
<td>Selenium Yeast Product</td>
<td>1.5X</td>
<td>1.29X</td>
<td>9.4X</td>
<td>1.33X</td>
</tr>
<tr>
<td>Sodium Selenite</td>
<td>1X</td>
<td>1X</td>
<td>1X</td>
<td>1X</td>
</tr>
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</table>

Research with broiler chicks showed that high Se-Met eXselen elevated tissue selenium more efficiently.

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

Se Yeast vs. Free Selenomethionine

- Yeast (Saccharomyces cerevisiae) is ubiquitous in our environment
- Yeast provides a natural, stable “package” for selenomethionine, with heat stability and good shelf life
- It is natural, with no chemicals used in extraction
- Good odor and taste
- Incorporates the health benefits of yeast itself
  - Glucans
  - Mannan oligosaccharides
  - Nucleotides

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Proprietary Production for High Quality

The secret to creating a superior product lies largely with a superior production process. The process starts with a yeast inoculum, nutrient substrate and selenium source being combined in an aerobic propagation system. As yeast growth occurs, the selenium is absorbed by the yeast cell and incorporated into the yeast’s organic matrix. Next come concentration and washing phases where nutrient media, pigments, excess water and residual inorganic selenium are removed. The remaining material is then spray dried and packaged. The final result is eXselen®, a fully pasteurized high-selenium yeast. The process complies with GMPs, is food grade and meets the highest purity standards.

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Selenium Yeast Growth

Concentration and Washing

Spray Drying and Packaging

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**TYPICAL ANALYSIS:**
- Selenium (Se) 2000-2300 mcg/g
- Protein 45%
- Moisture 6%

**MICROBIOLOGY:**
- Aerobic Plate Count < 3000 cfu/g
- Yeast & Molds < 300 cfu/g
- Coliforms < 0.3 MPN/g
- E. coli Negative
- Staph. aureus Negative
- Pseudomonas aeruginosa Negative
- Salmonella spp. Negative

**HEAVY METALS:**
- Arsenic (As) < 1 mcg/g
- Cadmium (Cd) < 1 mcg/g
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**PROPERTIES:**
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