GLU is a strategic blend of two naturally occurring compounds of proven, highly active mycotoxin sequestering and immunoenhancing ability.

GLU is specifically designed and formulated to maximize the complimentary strengths of the two compounds, creating a single product with the **broadest range of mycotoxin binding activity**, from aflatoxins, zearalenones to tricothecenes.

GLU is characterized by exceptionally wide surface absorption area/unit weight, providing **pronounced, specific and targeted activity at the lowest possible inclusion rate**, drastically minimizing the incidental binding of vitamins and other nutrients - avoiding the common, undesirable side action of non-specific and high inclusion rate clay binders.

GLU components are recognized as active **immunoenhancers**, a property highly beneficial in the induction and maintenance of disease resistance specially in young animals (broilers, piglets) and sow/layers.

**CONTENTS**

Natural b-carbocomplexes glucomannan and glucosamine (chitosan), calcium carbonate as carrier q.s.

**INDICATION**

As Mycotoxin binder in contaminated feed; As an aid in reducing effects of mycotoxin contaminated rations

**RECOMMENDED DOSAGE**

0.5 to 1 kg/ton of feed

**PACKAGING**

25 kg BOX

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**AGRIaccess, Bothell WA USA**

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San Juan City, Metro Manila
MECHANISM OF ACTION

TYPES OF MYCOTOXIN BINDING

**Electrostatic** - magnetic attraction between oppositely charged particles (+ with -), unspecific. Mechanism of action of clay binders. Indiscriminate binding with all particles of opposite charge.

**Template** - as in “lock and key” or “ball and socket”, specific and targeted binding character

**Hydrogen bond or covalent bonding** - also highly specific chemical bond, similar to chelation bonding, involves exchange of ions, commonly in conjunction with template.

**CLAYS**

Adsorption of mycotoxins by clay binders (i.e aluminosilicates, diatomaceous earth) is based entirely on electrostatic reaction, such that their range of activity has been limited to polar mycotoxins, such as aflatoxins. **Non-polar mycotoxins, such as zearalenones, tricothecenes (DON and T-2) and ochratoxins, are largely unaffected**. The high inclusion rate nature of such products, along with the non-specific binding mechanism, also tend to reduce availability of vital reactive nutrients like minerals and vitamins.

**GLUCANS**

Mycotoxin binding by glucans and oligosaccharides is characterized by a variety of interactions, ranging from specific template to dipolar to electrostatic and hydrogen bond combinations. Thus, effective binding activity has been established for both polar and non-polar mycotoxins. Evident specificity and low dosage greatly minimizes impact on other vital nutrients.

**IMMUNOENHANCING AND ANTIBACTERIAL ACTIVITY**

Current findings indicate that functional mannans and oligosaccharides have the intrinsic ability to initiate immunoenhancing reactions. Orally ingested mannans tend to induce proliferation of mononuclear cells. Mycotoxin binding by glucans and oligosaccharides is characterized by a variety of interactions, ranging from specific template to dipolar to electrostatic and hydrogen bond combinations. Thus, effective binding activity has been established for both polar and non-polar mycotoxins. Evident specificity and low dosage greatly minimizes impact on other vital nutrients.

**REFERENCES**


Nakakuki, T. Functional Oligosaccharides. 2003


Marquadt, R. Dietary reduction of Mycotoxin (Ochratoxin A, T-2 and DON) Toxicity using new Absorbent, Chitosan. MRAC, 2002

Nakakuki, T. Functional Oligosaccharides. 2003


Gallagher, B. et al. Efficacy of Glucomannan and Chitosan Combination as Mycotoxic Adsorbent. 2002

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**CURRENT**

**NUTRITION**

**TECHNOLOGY**

Glucomannan, in the naturally acetylated or esterified soluble form, have been found to possess very strong binding affinity to sterol structured mycotoxins like aflatoxin, tricothecene and fumonisins, but relatively weak on zearalenone and ochratoxins (Aravind, et.al. 2003, Swamy et.al. 2003)

Chitosan, in its deacetylated soluble form, possesses marked binding affinity zearalenone and ochratoxins, T-2 and DON (Choi, et.al.2000; Kumar, MNV 2000, Marquadt, R. 2002).

**Combination of soluble glucomanann and chitosan have shown to be more effective than either product alone, both in terms of spectrum width and strength of activity** (Gallagher et.al. 2002)

<table>
<thead>
<tr>
<th>GLUCOMANANN + CHITOSAN</th>
<th>1mg/kg concentration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aflatoxin</td>
<td>&gt;92%</td>
</tr>
<tr>
<td>DON</td>
<td>&gt;85%</td>
</tr>
<tr>
<td>T-2</td>
<td>&gt;78%</td>
</tr>
<tr>
<td>Zearalenone</td>
<td>&gt;74%</td>
</tr>
<tr>
<td>Fumonisine</td>
<td>&gt;83%</td>
</tr>
<tr>
<td>Ochratoxin</td>
<td>&gt;79%</td>
</tr>
</tbody>
</table>

*Rat Trials, Agriaccess