CONTRIBUTION TO THE SAFETY OF MEAT RABBIT WITH THE DETECTION OF AFLATOXIN B1 IN BALANCED FOOD FOR RABBITS

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ABSTRACT

The aim of this project was to detect the B1 Aflatoxin, in balanced food for rabbits, distributed by different commercial brands, using as method of investigation the chromatography in fine layer, by means of the use of acetonitrilo to obtain the substratum of the food. Once prepared one preceded the plate, it was immersed in a mixture of 98 ml of Tetrachloride of Carbon (CHCl3) + 2 ml of Methanol (Ac2O). It was done by the ascending method, this allows that the thinner ascend for the plate almost vertically for the action of capillarity. The plate was revealed by a lamp of ultraviolet light to a wave of excitation of 254 nm.

Observing the plate, the results obtained in the first 6 points, the B1 aflatoxin appeared since they were exposed to different concentrations of B1 aflatoxin, in order that they were serving us as witnesses and in the last three points that correspond to our samples there was not the B1 aflatoxin.

Therefore, our results were negative to B1 aflatoxin for three different commercial brands of balanced food for rabbit that were analyzed.

Key words: Aflatoxin, balanced food, rabbit, chromatography in fine layer, ultraviolet light.
Introduction

It is mentioned in some studies that rabbit meat is a meat lower levels of mycotoxins because the food is balanced primarily forage and lipids, starches are substrates for fungal growth, and the possibility of its presence is low and sometimes null. But there are few studies to investigate the safety, and order to verify the absence of contamination by mycotoxins in this species, this study aimed to conduct a study to determine the state of Aflatoxin B1 contamination in feed in using different proprietary chromatography method thin layer for detection (DIRECTIVE 2002/32/EC).

Aflatoxins are secondary metabolites produced by some of the *Aspergillus* species that grow in food products, and which in turn consumption can affect the metabolism of almost all living things. the Aflatoxins are considered as the most potent carcinogen produced in nature and are also considered mutagenic agents, teratogenic and hepatotoxic for many living species including both humans and animals, so we need to be protected maximum consumption or contact with these mycotoxins (Mariscal 1997 Q. Jaime Cornejo, 2004).

Aflatoxins have been associated with various diseases, such as aflatoxicosis in livestock, domestic animals and humans. the Aflatoxins have received more attention than any other mycotoxicosis due to its potent carcinogenic effect, which was found in susceptible laboratory animals and their acute toxicological effects in humans human (primary liver cancer) (Avila. 2000).

There are four major aflatoxins: B1, B2, G1, G2. Aflatoxin B1 is the most potent agent among all carcinogenic aflatoxins; most available toxicological data related to Aflatoxin B1 (Alberto G., 2009).

Objective

Determined by thin layer chromatography the feed for rabbit, different brands in the region are contaminated by aflatoxin B1.
Justification

In rabbits mentioned that rabbit meat is the healthiest because it has not klenbuterol and mycotoxin-free food is still the most reliable in meat products for this reason this research was designed to determine the level of contamination by aflatoxin B1 in commercial rabbit feed.

Materials and methods

The method is based respecting Mexican Official Standard NOM-188-SSA1-2002 PRODUCTS AND SERVICES. AFLATOXINS IN CONTROL GRAINS FOR HUMAN AND ANIMAL CONSUMPTION. SPECIFICATIONS HEALTH. (5).

We went to commercial establishments located in Tehuacan Puebla, to buy 5kg bags of rabbit feed, in order to collect the amount of different trademarks that offer balanced rabbit feed.

In our gathering we obtained different trademarks; NUTREL, PABSA and PURINA. Following the collection of the samples was carried out to prepare to do the technique of thin layer chromatography.
Sample Preparation

The samples were ground until they were fully powder. 50 g was weighed. of each sample and ground, they added 200 ml acetonitrile as a solvent, perfectly mixed, and the mixtures were filtered to obtain the extracts. This procedure was repeated exactly in triplicate and the three samples of each food.

Preparation of plates

On each plate we proceeded to make a line on the bottom line and divide by 9 points, as shown in the picture. The nine points were identified.
At points 1, 2 and 3 are placed with a micro syringe extract Nutrel sample of Purina + Pabsa and 20 ng of aflatoxin B1 respectively. In paragraphs 4, 5 and 6 were placed with a micro syringe 30 ng, 20 ng and 10 ng aflatoxin B1 respectively. In paragraphs 7, 8 and 9 are placed with a micro syringe extract Nutrel sample of Purina Pabsa and respectively.

Once prepared, it was plaque proceeded to immerse into a mixture comprises from 98ml of carbon tetrachloride (CHCl3) + 2 ml of methanol (Ac2O) was performed by the rising method, that is to allow the diluent ascend plate almost vertically by capillary action.
Read plates. Subsequently, the plates get thinner, the reading was done by developing the ultraviolet (UV) at an excitation wavelength of 254 nm.

![Figure 7. Revealed plates with ultraviolet light.](image)

The development was carried out in a dark room watching aflatoxin B1, which is in our interest, which is observed in a blue color.

Results
Looking at the plate have resulted in the first 6 points, ran aflatoxin B1, as these points were exposed to concentrations of aflatoxin B1 and the last three points correspond to our samples, ran no aflatoxin. Therefore, our result is negative for the different Aflatoxin B1 trademarks of balanced rabbit food analyzed thin layer chromatography.
### RESULTS

<table>
<thead>
<tr>
<th>POINT</th>
<th>CONTAINS</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Nutrel</td>
<td>+ 20 ng of Aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>2 Pabsa</td>
<td>+ 20 ng of Aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>3 Purina</td>
<td>+ 20 ng of aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>April</td>
<td>30 ng of aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>May</td>
<td>20 ng of aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>June</td>
<td>10 ng of aflatoxin B1</td>
<td>Positive</td>
</tr>
<tr>
<td>7 Nutrel</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>8 Pabsa</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>9 Purina Negative</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SPECIES (µg / kg) micrograms / kg

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>SHEEP</th>
<th>GOAT</th>
<th>CHIKEN</th>
<th>PIG</th>
<th>MILK BOVINE</th>
<th>MEAT BOVINE</th>
<th>TERNE RAS</th>
<th>RABBITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Salvador</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>–</td>
<td>?</td>
</tr>
<tr>
<td>Chile</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>–</td>
<td>?</td>
</tr>
<tr>
<td>Colombia</td>
<td>–</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEXICO</td>
<td>–</td>
<td>–</td>
<td>200</td>
<td>–</td>
<td>200</td>
<td>–</td>
<td>–</td>
<td>?</td>
</tr>
<tr>
<td>NORMA OFICIAL MEXICANA NOM-188-SSAI-2002</td>
<td>–</td>
<td>–</td>
<td>100</td>
<td>Excep to pollos de engorda</td>
<td>25-45 kg.</td>
<td>100 Mayor 45 kg. 200 Reproductores 100</td>
<td>Maduros destinados a reproductores 100 De engorda en etapa de finalización 300</td>
<td>–</td>
</tr>
</tbody>
</table>

Figure 9. Results and revealed
Discussion

The above table shows that there are no studies of aflatoxin B1 in food for rabbits, for that reason this study was conducted, and rabbit meat is an alternative for human consumption.

Conclusion

According to the rules, regulations and consulted research made reference to the concentration of aflatoxin B1 in balanced feed for rabbit, it is concluded that Nutrel, Pabsa and Purina brands, which were analyzed by the method of thin layer chromatography are free of aflatoxin B1.

Bibliography

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