

ABSTRACT

STUDIES ON THE DETOXIFICATION OF AFLATOXINS CONTAMINATED RABBITS' RATIONS

The aim of the present study is to investigate the effect of ammonia, clay and poultry litter treatments on detoxification of aflatoxin contaminated rabbits' rations. Five rations (control, aflatoxin contaminated ration, contaminated ration treated with ammonia (1%), contaminated ration treated with clay (2%) and contaminated ration treated with poultry litter (1:1) fed to 80 New Zealand male rabbits (16 animals each). The results were indicated that feeding contaminated ration lead to decrease in CP, OM and NFE contents, increase in ash content and less feeding value (TDN) compared to other rations. Rabbits had less feed intake, loss in daily gain, increase in blood AST, ALT, ALP, urea, creatinine and bilirubin. On the other hand, ammoniation and clay (bentonite) succeeded in come over the effect of aflatoxins and were comparable with the control group. Internal organs were affected by aflatoxin, where liver, kidneys and heart increased in their weights, while lungs weights were decreased. No detectable changes were observed in the ammoniated or clay groups. So, ammoniation or clay addition proved to be recommended as a cheapest way to inhibit the fungus growth and can detoxificate its effect in rabbits feeds. While treatment with poultry litter can be considered as the second choice

دراسات على إزالة سمية الأفلاتوكسينات من أعلاف الأرانب

الملخص

أجريت هذه الدراسة بغرض تتبع أثر تغذية الأرانب على أعلاف مصابة بالأفلاتوكسينات حيث تم تغذية عدد 80 أرنب ذكر من صنف النيوزلندي الأبيض على خمسة علائق الأولى خالية من الإصابة بالأفلاتوكسينات (مجموعة المقارنة) ، والثانية مصابة بالأفلاتوكسين، والثالثة مصابة بالأفلاتوكسين ومعاملة بالأمونيا الغازية (1%) والرابعة مصابة بالأفلاتوكسين ومعاملة بالبنتونيت (2%) والخامسة مصابة بالأفلاتوكسين ومعاملة بفرشة الدواجن (1:1). وقد تلخصت النتائج فى انخفاض محتوى كل من البروتين والمادة العضوية والكربوهيدرات وزيادة الرماد فى العليقة المصابة بالأفلاتوكسين و نقص القيمة الغذائية للعليقة معبراً عنها بـ TDN عن باقى العلائق مع انخفاض فى كمية العليقة المأكولة. وأن المعاملة بالأمونيا أوالمعاملة بالبنتونيت أوالمعاملة بفرشة الدواجن قد أدت إلى تقليل الأثر السام للأفلاتوكسينات بدرجة كبيرة وأن هذه النتائج انعكست على نمو الأرانب حيث نقص النمو مع العليقة المصابة فى حين زاد النمو مع العليقة المقارنة و العلائق المعاملة بدون اختلافات معنوية بينهما. وأن الإصابة بالأفلاتوكسينات قد أدت إلى زيادة تركيز إنزيمات الكبد (AST, ALT and ALP) وإفراز الكلى من اليوريا والكرياتين فى دم الأرانب المغذاة على تلك العليقة مع ملاحظة زيادة إنزيم البيليروبين أيضاً بالمقارنة بالعلائق الأخرى وقد أدى ذلك إلى تضخم الكبد والكلى والقلب مع حدوث احتقانات دموية فى الأمعاء وارتخاء عضلات القلب و حدوث نفوق فى الأرانب المصابة. ويستخلص من هذه الدراسة أن المعاملة بالأمونيا أوالمعاملة بالبنتونيت أ والمعاملة بفرشة الدواجن للأعلاف المصابة بالأفلاتوكسينات يمكن أن يؤدى إلى القضاء على الأثر السام لها بالإضافة إلى إمكانية التطبيق العملى لها ورخص المعاملة مع ضرورة الاهتمام بطرق تخزين الأعلاف لما لها من أثر إيجابى على تقليل فرصة نمو الفطريات و من ثم إنتاج الأفلاتوكسينات. علماً بأن المعاملة بالأمونيا تأتى فى المرتبة الأولى لرخص استخدامها وارتفاع كفاءتها و تليها المعاملة بالطمي (البنتونيت) هما أفضل المعاملات فى حين تأتى المعاملة بفرشة الدواجن كأختيار ثانى.

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ARABIC SUMMARY.	

LIST OF ABBREVIATIONS

Albumin

A	
A.	: <i>Aspergillus</i>
A/G	: Albumin/Globulin ratio
AF	: Aflatoxin
AFI	: Aflatoxin intake
ALP	: Alkaline phosphatase
ALT	: Alanine aminotransferase
AST	: Aspartate aminotransferase
BW	: Body weight
BWG	: Body weight gain
CF	: Crude fiber
CP	: Crude protein
DCP	: Digestible crude protien
DCPI	: Digestible crude protein intake
DE	: Digestible energy
DEI	: Digestible energy intake
DG	: Daily gain
DM	: Dry matter
DMI	: Dry matter intake
EE	: Ether extract
<i>F.</i>	: <i>Fusarium spp.</i>
FAF	: Fecal aflatoxin
FC	: Feed conversion
FBW	: Final body weight
FDA	: Food and Drug Administration
FI	: Feed intake
Fig	: Figure
G	: Globulin
g/h/day	: Gram/head/day
GI	: Gastrointestinal
IBW	: Initial body weight
IU/L	: International Unit / Liter
Kcal/g	: Kilo calorie /gram
KW	: Kilowatt
LD ₅₀	: The median lethal dose
LBW	: Live body weight
Mw	: Molecular weight

N	: Nitrogen
NA	: Nitrogen absorbed
NB	: Nitrogen balance
NFE	: Nitrogen free extract
NI	: Nitrogen intake
NRC	: Nutrient Research Council
OM	: Organic matter
<i>P.</i>	: <i>Penicillium spp.</i>
P.D.A	: Potatos-dextrose agar
Proc.Int.Symp. Mycotoxins	: Proceedings of the international symposium on mycotoxins
PSI	: Pound per square inch
rpm	: Round per minute
TDN	: Total digestible nutrients
TDNI	: Total digestible nutrients intake
TLC	: Thin layer chromatography
TP	: Total protein
Vit	: Vitamin
W/V	: Weight/Volume
W/W	: Weight/Weight