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**AFLATOXINS ABSORPTION AND EXCRETION DYNAMICS  
IN DAIRY COWS: TECHNICAL STRATEGIES TO REDUCE  
METABOLITES CARRY OVER IN MILK**

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## **RIASSUNTO**

LE AFLATOSSINE SONO POTENTI SOSTANZE CANCEROGENE PRESENTI IN NATURA. L'AFLATOSSINA B1 VIENE POCO DEGRADATA NEL RUMINE ED È ECRETATA NEL LATTE COME AFLATOSSINA M1 CON UN CARRY OVER DEL 1-3%. NEL PRESENTE LAVORO È STATO STUDIATA L'APPARIZIONE DELLE AFLATOSSINE NEL SANGUE CONSEGUENTE ALL'INGESIONE ORALE DI UN BOLO CONTAMINATO PER VERIFICARE COME QUESTE TOSSINE SONO ASSORBITE NEL TRATTO DIGESTIVO DELLE VACCHE DA LATTE. LA COMPARSA NEL PLASMA E NEL LATTE ATTRAVERSO UNA MUCOSA TIPICAMENTE NON DI ASSORBIMENTO PER DETERMINARE IL POSSIBILE MECCANISMO CHE REGOLA L'ASSORBIMENTO DELLE AFLATOSSINE È STATO UN ULTERIORE OGGETTO DI STUDIO. UN' ALTRA PROVA È STATA EFFETTUATA CON VACCHE DA LATTE PER STUDIARE IL CARRY-OVER DELL'AFLATOSSINA B1 NEL LATTE IN RELAZIONE AL LIVELLO PRODUTTICO E ALLE CELLULE SOMATICHE, COME INDICATORE DI PROCESSI INFIAMMATORI NELLA MAMMELLA. LA CAPACITÀ SEQUESTANTE DI DIVERSI TIPI DI ADSORBENTI È STATA COMPARATA IN PROVE IN VITRO CONDOTTE IN DIFFERENTI CONDIZIONI SPERIMENTALI. ANCHE IL COMPORTAMENTO DEL COMPLESSO AFLATOSSINA-ADSORBENTE NEL TRATTO DIGESTIVO DI VACCHE IN LATTAZIONE È STATO STUDIATO IN VIVO PER MEZZO DELLA MISURAZIONE DELLA PRESENZA DI AFLATOSSINA M1 NEL LATTE. UNA PROVA IN VIVO È STATA EFFETTUATA PER VERIFICARE L'EFFETTO CHE LA PELLETTATURA O LA SEMPLICE MISCELAZIONE DI ADSORBENTI NEI MANGIMI PUÒ AVERE NEL MIGLIORARE L'EFFICIENZA DI SEQUESTRO.

## **ABSTRACT**

AFLATOXINS ARE THE MOST POTENT NATURAL CARCINOGENIC COMPOUND PRESENT IN NATURE. AFLATOXIN B1 IS POORLY DEGRADED IN THE RUMEN AND IS EXCRETED IN MILK AS AFLATOXIN M1 WITH A CARRY-OVER RATE OF 1-3%. THE PRESENT WORK INVESTIGATED RATE AND SCHEDULE OF AFLATOXINS PLASMA APPEARANCE FOLLOWING AN ORAL CONTAMINATED BOLUS TO VERIFY HOW THESE TOXINS ARE ABSORBED IN THE GASTRO-INTESTINAL TRACT OF DAIRY COWS. AFLATOXINS PLASMA AND MILK APPEARANCES WERE ALSO INVESTIGATED USING A NON-ABSORBING MUCOSA TO UNDERSTAND THE POSSIBLE AFLATOXINS ABSORPTION MECHANISM THROUGH MUCOUS MEMBRANES. A TRIAL WAS CARRIED OUT IN LACTATING DAIRY COWS TO STUDY THE CARRY OVER OF INGESTED AFLATOXIN B1 IN MILK AS AFLATOXIN M1 IN RELATION TO MILK YIELD AND SOMATIC CELLS COUNT, THE LATTER AS INDICATOR OF UDDER INFLAMMATORY PROCESSES. SEQUESTERING CAPACITY OF DIFFERENT KINDS OF MYCOTOXINS SEQUESTERING AGENTS WERE COMPARED IN VITRO TRIAL CARRIED OUT AT DIFFERENT EXPERIMENTAL CONDITIONS. THE BEHAVIOUR OF THE AFLATOXINS-ADSORBENTS COMPLEXES THROUGH DIGESTIVE TRACT OF LACTATING DAIRY COWS WERE ALSO INVESTIGATED IN VIVO BY MEASURING APPEARANCE OF AFLATOXIN M1 INTO MILK. AN IN VIVO TRIAL WAS CONDUCTED TO VERIFY IF EFFECT OF PELLETIZING OR SIMPLY MIXING PROCESSES IS USEFUL TO IMPROVE MYCOTOXINS SEQUESTERING AGENTS EFFICACY IN DAIRY COW NUTRITION.