THIRD REPORT OF THE SCIENTIFIC COMMITTEE FOR ANIMAL NUTRITION ON THE USE OF NICARBAZIN IN FEEDINGSTUFFS FOR CHICKENS

Opinion expressed on 8 July 1986

In its report of 5 July 1985 (1), the Committee stated, in an opinion supplementing its 1982 assessment (2), that the use of nicarbazin in feedingstuffs for fattening chickens at a dose of 100-125 mg/kg complete feedingstuff could be provisionally maintained subject to a withdrawal period of not less than 9 days before slaughter. Before making a definitive statement the Committee considered that additional information on the metabolism of nicarbazin in chickens and on the biodegradation of excreted products was necessary. New experimental data are now available on these aspects and the Committee has expressed the following opinion.

OPINION OF THE COMMITTEE

The Committee has examined the reports on the new trials conducted in connection with the metabolism and residues of nicarbazin in chickens for fattening and its degradation in droppings and soil, using ^{14}C-labelled molecules either in the DNC moiety or in the HDP moiety.

A tissue residue study using 125 mg radiolabelled nicarbazin/kg feed had shown a residue of 0.3 mg nicarbazin/kg in the liver after 5 days withdrawal and less than 0.08 mg/kg after 11 days (limit of determination expressed as nicarbazin : 0.01 mg/kg). A new study of tissue residues by measurement of total radioactivity confirmed that residues decline to less than 0.1 mg nicarbazin/kg in liver,

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(1) Reports of the Scientific Committee for Animal Nutrition, Fifth Series (1986), No EUR 10.410, p. 35

(2) Reports of the Scientific Committee for Animal Nutrition, Fourth Series (1984), No EUR 8769, p. 51

kidney, muscle, fat and skin 7 days after withdrawal of feed supplemented with 50 mg nicarbazin/kg (limit of determination expressed as nicarbazin : 0.01 mg/kg). Determination of nicarbazin by HPLC in the same samples revealed the presence of 0.1 mg of the compound/kg in the liver but not in the other tissues after 5 days withdrawal (limit of determination : 0.05 mg nicarbazin/kg).

The study of nicarbazin metabolism in chickens showed that when the supplemented feed was withheld, more than 60 % of the radioactive tissue residues consist of unchanged DNC, except in the renal tissue where unchanged DNC accounts for 25 %. The rest of the radioactivity is attributed to small quantities of two identified metabolites, resulting from the reduction and acetylation of one or both NO_2 groups of the DNC, to traces of several other metabolites and to a non-extractable residue. A third metabolite resulting from the side chain cleavage, reduction and acetylation of DNC was also identified in the droppings.

At the proposed dose levels, the quantity of nicarbazin excreted by the chicken accumulates in the droppings but is eliminated almost completely ten days after withdrawal of the supplemented feed. Less than 0.2 mg nicarbazin/kg persist in the droppings if the birds are kept on unrenewed litter after complete withdrawal of the supplemented feed, possibly a result of some recycling (Friedrich et al., 1984 and 1985).

Nicarbazin, mixed with non-sterile earth kept in plastic containers or incorporated in field plots of loamy soil, degrades slowly. Its half-life is estimated at about 49 weeks. According to data examined previously (1)(2), this persistence does not present a hazard for the environment.

In the light of this additional information, the Committee is of the opinion that the use of nicarbazin may be authorized without risk in

feedingstuffs for fattening chickens at concentrations of 100 to 125 mg/kg, subject to a withdrawal period of at least 9 days before slaughter.

REFERENCES

Dossiers Merck Sharp and Dohme Research Laboratories and Lilly Research Laboratories (1986)

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