Book review — Boekresensie

Plantas tóxicas do Brasil

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This book, written in Portuguese, on the plants toxic to livestock in Brazil, is a major contribution to the knowledge of toxicology and toxic plants and will probably not be superseded as a definitive textbook on the subject in Brazil and other South American countries for many years to come, even though the latter are Spanish speaking. It will prove useful to certain other Portuguese-speaking countries outside South America, such as Angola and Mozambique.

Its contents have been accumulated over the course of many years of painstaking field investigative trips and observations, coupled with meticulous research and clinical and pathological studies (a large number of which have been published in Portuguese) by the authors who have dedicated themselves to the advance of veterinary science in Brazil. Several of the plants (e.g. Lantana camara and Cestrum laevigatum) discussed occur as problematic alien invaders of considerable toxicological significance in South Africa.

The book is divided into 3 main parts: general, specific intoxications and appendix. The general part includes subjects such as the definition of a toxic plant, toxic factors, conditions under which intoxications occur, diagnosis and methods of investigation of outbreaks and their prevention.

The 2nd part, which constitutes the bulk of the book, is divided into 3 main sections: important toxic plants that have caused cases or outbreaks of poisoning in livestock in the field, plants that have proved to be toxic experimentally and whose importance to livestock is uncertain, and plants that are toxic but are of no importance to livestock.

In the 1st section, the subject is approached on the basis either of the organ system of an animal that is primarily affected by the toxic principle of the plant or, in some cases, the effect of the plant on the animal as a whole, e.g. systematic calcinosis, haemolytic anaemia. Each of the important plants is discussed in detail under a general discussion followed by its distribution (which is depicted in a map of Brazil) and habitat, animal species affected, conditions under which intoxication occurs, parts of the plant which are toxic, clinical signs, macro- and microscopic pathology, diagnosis and differential diagnosis, toxic principle of the plant, treatment and prophylaxis, and, finally, a reference list is given. Each of the more important plants is illustrated in a colour photograph(s) and/or line-drawing(s) as are the significant clinical signs and pathology.

The 1st chapter in this section concerns plants that affect the heart, and concludes with those causing ‘sudden death’ in livestock, a subject with which South African veterinarians are all too familiar. Of special interest is Palicourea margravii (Rubiaceae), whose toxic principle (like that of gifblaar, or ‘poison leaf’, Dichapetalum cymosum, Dichapetalaceae) is monofluoroacetate. Palicourea margravii is widely distributed in Brazil and is responsible for many outbreaks of intoxication. It is regarded as the most important toxic plant that causes sudden death in Brazil. Other plants in this category of ‘sudden death’ are 3 other species of the genus Palicourea, whose active principles have not yet been determined as well as plants of the Bignoniaceae and Malpighiaceae families. Despite the estimate that cardiac glycoside poisoning is the most important plant poisoning of South Africa (responsible for about 37% of all mortalities caused by plant poisonings and mycotoxins), only 1 Brazilian plant is listed in this category, namely Arrabidaea blabata (Bignoniaceae).

Under the heading ‘Plants causing subacute to chronic cardiac failure’ are Tetraperyx acutifolia (Malpighiaceae) and Atelea glazioviana (Fabaceae (= Leguminosae) Papilionoideae). These 2 plants cause myocardial lesions similar to those occurring in the South African gousiekte (‘quick disease’) syndrome caused by certain members of the genera Rachystigma, Pavetta and Fadogia (Rubiaecae). In gousiekte, however, death is usually sudden, although myocarditis is generally relatively chronic, because in experimental disease the latent period is 6–8 weeks. Subacute, but fatal, cases of gousiekte have, however, been described. A most interesting comparison of the Brazilian, Australian and South African poisonings in this category is given, and the possibility that many more plants in Brazil might contain fluoroacetate, cardiac glycosides or even the polyamines responsible for gousiekte should be considered for investigation.

In the 2nd chapter in this section, 5 plants in 4 families, namely Asteraceae (= Compositae), Fabaceae (= Leguminosae) Mimosoideae, Iridaceae or Euphorbiaceae affecting the gastrointestinal tract are dealt with. In addition, there is a short account of those plants that cause ruminal tympany.

The 3rd chapter concerns hepatotoxic plants of 3 families, Solanaceae (Cestrum spp. and Sessea brasilien-sis), Asteraceae (Veronia, Xanthium and Seneio spp.) and Borraginaceae (Echium sp.).

Nephrotoxic plants comprising Thiloa glauccapra (Combretaceae) and members of the genus A maranthus (Amaranthaceae) are discussed in the 4th chapter.

Intoxications caused by 8 plants and the fungus Claviceps paspali are described in the chapter concerning the central nervous system. The plants include Solanum fastigiata var. fastigiata which, when eaten by cattle produces clinical signs and lesions resembling those of Solanum kwebense, which occurs in South Africa. Other plants dealt with here are 2 species of Ipomoea (Convolulaceae), 1 of which (I. fistulosa = I. carnea) has recently proven to be the cause of storage disease produced by glycoside inhibitors in Mozambique, into which country it was introduced; Ricinus...
Manihot desertorum (Euphorbiaceae); plants containing when ingested; plants responsible for the development of haemolytic anaemia (the grass Brachiaria spp., trees and shrubs including South Africa where, in the eastern high rainfall areas, it is a declared invader. Its widely-recorded deleterious effects due to the toxic alkaloid mimosine only occur at high intake of this valuable fodder- and firewood-producing species.

The last of the 3 main sections concerns plants that are toxic but are of no importance to livestock in the practical sense.

The Appendix is divided into 3 chapters: plants that were experimentally tested but produced inconclusive results; plants that were tested with negative results; and experiments in which ornamental plants were fed to farm animals. It appears that very little work has been done on the isolation of active principles of the Brazilian plants that are of veterinary toxicological importance. Where possible, the classification of plant poisonings according to their toxic principles has proved to be of inestimable value to practising veterinarians and pathologists in South Africa, and it is clear that a wealth of fascinating and rewarding work for chemists working in conjunction with veterinarians lies ahead in Brazil in this regard.

Inclusion of vegetation and climatic maps of Brazil is strongly recommended for any further editions, as this would assist the reader to deduce more accurately under which conditions a particular toxic plant could be expected to occur. In addition, an English translation of the book of such high quality and the photographs, other illustrations and format are exceptional. The authors are to be congratulated on producing a book of such high standard.

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