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LC/UV/MS AS A TOOL FOR INVESTIGATION OF *PHALARIS* PASTURE TOXICITY

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Phalaris is a valuable pasture grass in much of southern Australia, however it has been associated with periodic outbreaks of toxicity since its introduction. Toxicity manifests in two general categories – a neurological form known as 'staggers' which can be immediate or delayed in onset, and a 'sudden death' form, involving cardiac arrest or the onset of polioencephalomalacia. The staggers syndrome has been reproduced by administration of purified tryptamine alkaloids[1], which occur naturally in some *Phalaris spp*. pastures. The aetiology of the sudden death form of toxicity, which still occurs on low-alkaloid cultivar pastures, remains unresolved[2]. A tentative association of the cardiac sudden death syndrome with N-methyltyramine content of the grass has been suggested[3].

In May 1997, several properties in South Eastern Australia experienced sudden sheep deaths (usually overnight) on *Phalaris spp.* pastures. Brain tissue samples from affected sheep were examined and the early stages of polioencephalomalacia observed. Samples of grass collected at the site and time of poisoning were extracted and analysed. Previous analyses involved a combination of TLC, HPLC and GC/MS[4]. As part of this ongoing investigation into the pathology and potential chemical causes of the *Phalaris* 'Sudden Death' syndrome, LC/UV/MS was assessed for its potential to comprehensively profile pasture extracts and identify constituents of toxic pastures absent or present at significantly lower levels in non-toxic pastures.

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[1] Gallagher, C.H., Koch, J.H., and Hoffman, H. Aust. Vet. J. 1966, 42, 279

[2] Bourke, C.A. 1994, Colegate, S.M. and Dorling, P.R. (eds*), Plant-Associated Toxins: Agricultural, Phytochemical and Ecological Aspects*. CAB International, Wallingford, Oxon, 269.

[3]Anderton, N., Cockrum, P.A.,Walker, D.W. and Edgar, J.A. 1994, Colegate, S.M. and Dorling, P.R. (eds*), Plant-Associated Toxins: Agricultural, Phytochemical and Ecological Aspects*. CAB International, Wallingford, Oxon, 413

[4]Anderton,N.,Cockrum, P.A.,Colegate, S.M.,Edgar, J.A. and Flower, K.. Phytochemical Analysis 1999 *in press*