

VARIATION IN COUMARIN CONCENTRATION BETWEEN LINES OF *MELILOTUS SP.*J.L. KITCHEN^A, D. MCLACHLAN^B, S. HUGHES^B and D.K. REVELL^A^A Dept of Animal Science, The University of Adelaide, Roseworthy, SA 5371^B Australian Medicago Genetic Resource Centre, South Australian Research and Development Institute, Adelaide, SA 5001

Sweet clover (*Melilotus sp.*) has recently been identified in Australia as a pasture legume potentially suited to saline land. Some *Melilotus* species have shown high herbage productivity under such conditions. However, *Melilotus* can contain high levels of coumarin that can be converted to dicoumarol upon fungal contamination (Sanderson *et al.* 1986). Dicoumarol is an anti-coagulant and is the cause of sweet clover poisoning in stock fed spoiled *Melilotus* hay (Yamini *et al.* 1995).

Leaf tissue from 93 *Melilotus* lines, sampled when 90% of the plants were flowering, was freeze dried, ground, extracted using methanol at 35°C under vacuum and analysed for coumarin concentration using HPLC.

Coumarin concentrations ranged from 0.05 to 1.04% DM. Intra-specific variation was large for all species tested (Figure 1). Seventeen of the 19 *M. sulcatus* lines tested contained below 0.2% coumarin, whereas a high proportion of lines from species such as *M. albus*, *M. elegans* and *M. suaveolens* contained over 0.5% coumarin. Other species with potentially low coumarin include *M. dentatus*, *M. infestus*, *M. messanensis* and *M. neapolitanus*, although more lines of these species need to be screened.

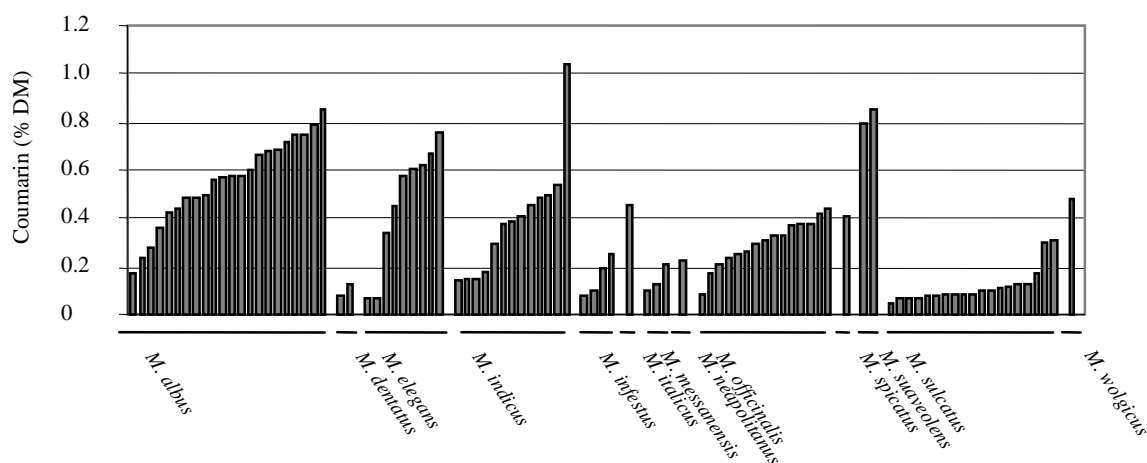


Figure 1. Coumarin concentration in leaves of *Melilotus sp.* (93 lines) at 90% flowering

Further work is required to identify critical concentrations of coumarin that may pose potential problems to animals consuming mouldy plant material. The dicoumarol concentration in spoiled pasture or mouldy hay depends, in part, on the original coumarin concentration of the plant material, and hence care may need to be taken if the *Melilotus* lines with higher coumarin concentration are grazed under conditions where fungal spoilage may occur. This may necessitate, for example, the monitoring of sedimentation rates or clotting time of blood collected from grazing animals. Further work is also required to quantify the variation in coumarin concentration across stages of plant maturity and under different growing environments.

SANDERSON, M.A., MEYER, D.W. and CASPER, H.H. (1986). *Anim. Feed Sci. Tech.* **14**, 221-30.

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