Literature On Toxic Lichens and Lichen Compounds

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If there are relevant articles that you know of that are not listed below, please let us know!

Species or Compound	Reference
Xanthoparmelia chlorochroa	Anonymous. 2004. Elk Die off on Red Rim, Southeastern Wyoming. Wyoming State Veterinary Laboratory Newsletter. April. Cook, W., M. Raisbeck, T. Cornish, E. Williams, B. Brown, G. Hiatt, and T. Kreeger. 2007. Paresis and Death in Elk (*Cervus elaphus*) Due to Lichen Intoxication in Wyoming. Journal of Wildlife Diseases 43: 498-503. Doster, G.L., 2004. Wyoming Elk Mortality. Southeastern Cooperative Wildlife Disease Study Briefs 20: 1-2. Dailey, R. N., D. L. Montgomery, J. T. Ingram, R. Siemion, M. Vasquez and M. F. Raisbeck. 2008. Toxicity of the lichen secondary metabolite (+)-usnic acid in domestic sheep. Environmental Pathobiology 45: 19-25.
Cladina rangiferina, Cladina subtenuis, Cladonia sp., Haematomma sp., Lecidea sp., Lepraria sp., Roccellina sp., Sterercaulon sp.	Dayan, F.E. and J.G. Romagni. 2001. Lichens as a potential source of pesticides. Pesticide Outlook 12: 229-232.
(-)- and (+)-usnic, vulpinic, stictic acids	Emmerich, R., I. Giez, O.L. Lange, and P. Proksch. 1993. Toxicity and antifeedant activity of lichen compounds against the polyphagous herbivorous insect *Spodoptera littoralis*. Phytochemistry 33: 1389-1394.
Usnic, lecanoric, evernic, vulpinic, stictic, fumarprotocetraric, psoromic, atranorin acids	Gardner, C.R. and D.M.J. Mueller. 1981. Factors affecting the toxicity of several lichen acids: effect of pH and lichen acid concentration. American Journal of Botany 68: 87-95.

Species or Compound	Reference
Anaptychia runcinata, Cladina arbuscula, Cladina rangiferina, Evernia prunastri, Flavoparmelia caperata, Hypogymnia physodes, Hypotrachyna revoluta, Lobaria pulmonaria, Parmelia saxatilis, Parmelia sulcata, Parmelina tiliacea, Parmotrema chinense, Physcia aipolia, Physconia distorta, Platismatia glauca, Vulpicidia pinastri, Xanthoria parietina	Gauslaa, Y. 2005. Lichen palatability depends on investments in herbivore defense. Oecologia 143: 94-105.
Evernia prunastri, Hypogymnia physodes, Cladonia portentosa	Halama, P. and C. van Haluwin. 2004. Antifungal activity of lichen extracts and lichenic acids. BioControl 49: 95-107.
Aspicilia calcarea, Caloplaca flavovirescens, Lecanora muralis, Physcia adscendens, Tephromela atra, Xanthoria parietina	Hesbacher, S., B. Baur, A. Baur, and P. Proksch. 1995. Sequestration of lichen compounds by three species of terrestrial snails. Journal of Chemical Ecology 21: 233-246.
Cladonia pyxidata, parietin, atranorin, fumarprotocetraric acid, usnic acid, divaricatic acid, vulpinic acid	Hesbacher, S., I. Giez, G. Embacher, K. Fiedler, W. Max, A. Trawöger, R. Türk, O.L. Lange, and P. Proksch. 1995. Sequestration of lichen compounds by lichen-feeding members of the Arctiidae (Lepidoptera). Journal of Chemical Ecology 21: 2079-2089.
Cladina stellaris	Hyvärinen, M., B. Walter, and R. Koopmann. 2002. Secondary metabolites in Cladina stellaris in relation to reindeer grazing and thallus nutrient content. Oikos 96: 273-280.
Aspicilia gibbosa, Xanthoparmelia cumberlandia, Huilia albocaerulescens	Lawrey, J.D. 1980. Correlations between lichen secondary chemistry and grazing activity by *Pallifera varia*. Bryologist 83: 328-334.
Pseudoparmelia baltimorensis, Xanthoparmelia cumberlandia, Aspicilia gibbosa, Lasallia papulosa	Lawrey, J.D. 1983. Lichen herbivore preference: a test of two hypotheses. American Journal of Botany 70: 1188-1194.
Cetraria pinastri, Cetraria oakesiana	Lawrey, J.D. 1983. Vulpinic and pinastric acids as lichen antiherbivore compounds: contrary evidence. Bryologist 86: 365-369.

Species or Compound	Reference
Cladonia sp., Lecidea granulosa, Lepraria sp., Neofuscelia verruculifera, Neofuscelia loxodes, Xanthoria parietina, Pertusaria pertusa, Cladonia cristatella, Graphis scripta, Caloplaca citrina, Aspicilia gibbosa, Aspicilia cinerea, Lasallia papulosa, Ochrolechia yasudae, Pseudoparmelia baltimorensis, Xanthoparmelia cumberlandia, Peltigera canina, Evernia prunastri, Cladina subtenuis	Lawrey, J.D. 1986. Biological role of lichen substances. Bryologist 89: 111-122.
Argrestia hispida, Xanthoparmelia chlorochroa	MacCracken, J.G., L.E. Alexander, and D.W. Uresk. 1983. An important lichen of southeastern Montana rangelands. Journal of Range Management 36: 35-37.
Cladina stellaris	Markkola, A.M., U. Ahonen-Jonnarth, M. Roitto, R. Strömmer, M. Hyvärinen. 2002. Shift in ectomycorrhizal community composition in Scots pine (*Pinus sylvestris* L.) seedling roots as a response to nickel deposition and removal of lichen cover. Environmental Pollution 120: 797-803.
Hypogymnia physodes, Melanelia exasperate, Vulpicida pinastri, Xanthoria parietina	Pöykkö, H. and M. Hyvärinen. 2003. Host preference and performance of lichenivorous *Eilema* spp. larvae in relation to lichen secondary metabolites. Journal of Animal Ecology 72: 383-390.
Alectoria sarmentosa	Robbins, C.T. 1987. Digestibility of an arboreal lichen by mule deer. Journal of Range Management 40: 491-492.
Many species	Richardson, D.H.S. and C.M. Young. Lichens and Vertebrates. Chapter 5 in Seaward, M.R.D., ed. 1977. Lichen Ecology. Academic Press.
Usnea barbata, Xanthoparmelia chlorochroa	Roach, J.A.G., S.M. Musser, K. Morehouse, and J.Y.J. Woo. 2006. Determination of Usnic Acid in Lichen Toxic to Elk by Liquid Chromatography with Ultraviolet and Tandem Mass Spectrometry Detection. Journal of Agricultural and Food Chemistry 54: 2484-2490.
Many species and compounds	Rundel, P.W. 1978. The ecological role of secondary lichen substances. Biochemical Systematics and Ecology 6: 157-170.

Species or Compound	Reference
Atranorin, vulpinic acid, Letharia vulpina	Slansky, F. Jr. 1979. Effects of the lichen chemicals atranorin and vulpinic acid upon feeding and growth of larvae of the yellow-striped armyworm, *Spodoptera ornithogallii*. Environmental Entomology 8: 865-868.
Beta-methylamino-L-alanine	Weiner, J. 2005. The tangle: an ethnobotanist tries to solve the mystery of neurological disease on Guam. The New Yorker. April 11, pp 43-51.