Studies on insect control materials from plant origin

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Lantana camara Linn., family verbenaceae had apotent antifeedant activity. oonsequantly, it was importantto study the antifeedant activity of ~. camara and toisolate, purify and identify the principal or principalsresponsible tor this property.Tile plant was extracted with solvents of increse ingpolarity (oold extract) and a phytochemioal screening wasmade on the soluble-suocessive extracts, as well as drypowder. it could be concluded that -L. oamara leaves containmainly sterols and/or triterpenes. free and combinedflavonoids. glycosides and/or carbohydrate, tannins,saponins and sublimable SUbstances. Alkaloids and Nitrogenousbases are absent. Pet. ether extract containsmainly sterols and/or tri. terpenes.Feeding detrrent screening tests of tile extractswas made acoording te Butterworth (1971).The percent reductionof feeding/control was calculated. The 5-th instarnymphs of ~. gregaria were used. The screening showedthat pet. ether extract was the most potent followed byethanol 70 ~, then ether, aceton, chloroform and dis.water (91.16, 85.23, 83.73, 70.21, 42.30 and 37.42respectively) •Dried powder was extracted with pet. ether in asoxhlet extractor (Hot e2tract), the extract was examinedfor its antifeedant properties. Feeding tests showed95.69 % reduction of feeding/control. Therefore the pet.ether extract was fractionated on a column of alumina,using the solvent system pet. ether (FI); benzene (F2),benzene mixed with chloroform in an increasing proportions(20 to 50~) (,), chloroform (’4)’chloroform (F5) andchloroform: methanol (95 : 5 %) (P6)·Fraction) was the most potent as antifeedant(9).24 %). TLC examination of fraction 3 revealed thepresence of 2 spots (A and B) one of them was parallel tolantadene A while the other one was parallel to LantadeneB.For better separation am isolation of the activeingredients, fraction .3 was acetylated and the acetylatedproduct was intro~uced to preparative TLC chromatography,each developed band was scraped and separately withchloroform, and the acetyl group eli~ated, the two freecomponents A and B were solely examined for their antifeedantproperties. The results Obtained, showed that neithercomponent A (63.25 %) nor component B (40.96 %) reacnedthe antifeedant activity of their mother mixture of fraction3 (93.0) %). TLC technique of the two components of’3 by visualization by U.V. 1ight lISS used to avoid anychemical treatment which migb-t effect the stereochemicalstructure of these oompoundswhich may effect theirbiological properties.Result s revealed that 1’3 and component Awereactive as antifeedants (92.77 and 87.61 % respectively).Such results might support the deduction of some changein stereochemical structure during acetylation and removalof the acetyl group.Although, Jfhas a lower antifeedant aoti vity butit showed two new and unknown spot s on the TLC chromatogram.These two spots were corresponding to the same twospots in the original fraction. TLCseperation of F6 byvisuall zation Wlder U.V. Light revealed that fraction 6is a mixture of two steroid sUbstances C and D respectively.Canponents A, B, C and D were examined for theirpurity by detemining their melting point, optical rotation.elementary analysis, U.V., I.R. and 11.JI.R. Speotroscopicanalysis.The obtained results of the t1l0 components It. andB are almost in oompelete agreement 111tb. t bose Obtainedfor the two authentio samples Lantadene A and Lantadene B.The results obtained for the ’other two compou.n.dsC and D.were almost identical with that reviewed befor for o1eanolicacid and 22-B-hydroxy oleanonic acid respectively.Different concentrations of componentAt 70, 35,17.5 mg/100 ml. were t eated on ~. gregaria. Th.eobtainedresults showedthat the concentration 35 mg/100 ml. EtCHis the thresnold potent concentration 88 an1iifeedant.Stock solutions of the

componentsA, B, C and Dwere prepared by dissolving 35 mgof each in 100 ml, ,eth&nol. To study the biological effects differentsolutions were used. Results revealed slight toxicity bycontact a nd the compounddid not exerl ant' a.dverse biologicaleffect on the 6th instar Larvae of !. littoraliswhen topically applied. The results revealed some toxioeffects by feeding and no oUler adverse biological effectson the 6-th instar larvae or adults of -S. littoralis. It was evident that componentA produced somedegree offeeding deterrence to §. littoralis.