

# Short note on Natural Product R&D with New South Wales Agriculture

## Abstract

Following recent NSW Government restructuring, the Department of agriculture now exists in a composite form along with Forestry, Fisheries and Minerals in the new NSW Department of Primary Industries. This paper outlines some of the highlights of secondary metabolite R&D accomplished in the 25 years since the essential oil research unit was transferred from the Museum of Applied Arts & Sciences, Sydney to NSW Agriculture's Wollongbar Agricultural Institute on the NSW north coast.

The essential oil survey was continued, typing the Australian flora as a suitable source of isolates such as myrtenal (Astartea), myrtenol (Agonis), methyl chavicol (Ochrosperma),  $\alpha$ -phellandren-8-ol (Prostanthera), methyl myrtenate (Darwinia), methyl geranate (Darwinia), kessane (Acacia), cis-dihydroagarofuran (Prostanthera), protoanemonin (Clematis), isoamyl isovalerate (Micromyrtus), methyl cinnamate (Eucalyptus) and bornyl acetate (Boronia). Many of these components are used, or have Potential use in the fragrance, flavour, medicinal plant or insect attraction fields.

**Keywords:** methyl cinnamate •  $\beta$ -carbolines tribulusterine • anthocyanins • flavonoids • bioassay.

## Introduction

Two weeds deadly to stock within the Central West of the State are harvested commercially as medicative plants. measure of hypericin concentrations within the various plant elements of St John's Wort (*Hypericum perforatum*) over 2 seasons has shown that the weed are often effectively managed by grazing sheep throughout the winter months once poison levels square measure low [1]. Syntheses of  $\beta$ -carbolines tribulusterine and perlolyrine have shown that the previous organic compound was misidentified within the literature and hence not the deadly principle answerable for genus *Tribulus* staggers in sheep. Poor quality (high 18-cineole – low terpinen-4-ol) oil bearing tea tree (*Melaleuca alternifolia*) plantations are established to the damage of the many a tea sodbuster. Analytical strategies developed to envision leaf quality at Associate in nursing early age indicated precursorsabinene constituents that convert to the active terpinen-4-ol each because the leaf matures or the precursor's square measure distilled for drilling. Tea tree's major insect tormenter, pyrgo beetle (*Paropsisterna tigrina*), was seen to selectively metabolize only one,8-cineole from its monoterpenoid-rich diet.

Characterization of those and different metabolites from myrtaceous herbivores showed a species specific production of predominately ring hydroxylated merchandise, a number of that were engaging once bioassayed against adult beetles. St John's wort (*Hypericum perforatum*) and cathead or puncture tracheophyte (*Tribulus terrestris*), two weed species introduced to Australia, square measure notable for his or her toxicity to stock and are used as herbal remedies [2]. The photosensitization and even death of sheep behind browsing

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on pastures infested with these species have long been a priority of pastoralists within the central west of latest South

Wales. St John's wort has reached weed standing in several countries, as well as Australia, particularly as a result of photosensitizing symptoms imparted to browsing stock. As a medicative plant, *Hypericum perforatum* preparations square measure utilized in the treatment of delicate to moderately severe depression. Although the active ingredient is assumed to be the phloroglucinol hyperforin, the photosensitizing agent has been known because the naphthodianthrone hypericin. Quercetin and connected flavonoids square measure also familiar to be bioactive. *H. perforatum* is additionally familiar to possess antiviral and antiretroviral activity [3].

### Description

The major insect tormenter of tea tree plantations in north jap New South Wales is that the beetle prygo beetle, *Paropsisterna tigrina*. Investigation of the frass volatiles of each adult and larval forms indicated that eaten oil was usually excreted unchanged aside from one,8-cineole that was metabolized preponderantly to 2 $\beta$ -hydroxycineole with traces of the 2 $\alpha$ , 3 $\alpha$  and 9-hydroxycineole isomers. Examination of frass from different cineole ingesting herbivores has shown that this metabolism is species specific. Mammals were seen to preferentially oxidize the foremost sterically unrestrained alkyl radical substituents within the one,8-cineole molecule. Amongst the marsupials, the koala oxidizes cineole

additionally extensively (to group acids) than the possum and different Renaissance man herbivores. Insects but, favour hydroxylating the ring carbons. Even at intervals the insect kingdom, hydroxylation varies with the species suggesting a pheromonal use for the metabolites. This was confirmed with prygo beetle by the attraction of twenty five out of twenty six beetles toward crystals of 2 $\beta$ -hydroxycineole during a alternative take a look at with a blank. North-eastern office grows a spread of tropical farming crops like macadamias, avocados, custard apples and lychees liable to attack by insect pests like monolepta beetle, macadamia nut borer and fruit recognizing bug [4].

### Acknowledgements

None

### Conflict of Interests

None

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