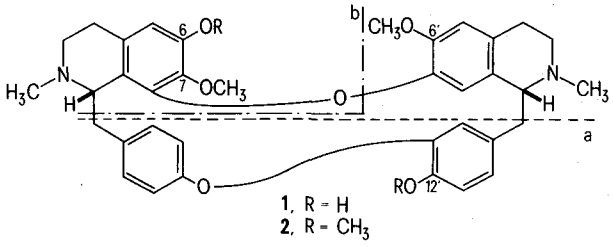
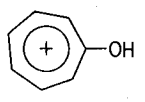
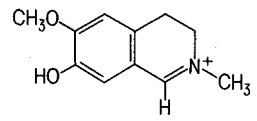


1, R = H
2, R = CH_3



m/e 107



m/e 192

Significantly, baluchistine (**1**) is different in its spectral and physical properties from the isomeric aromoline of identical absolute configuration, but in which the 2 phenolic groups are located at C-7 and C-12′.

It is worth noting that baluchistine is the 1st bisbenzylisoquinoline alkaloid within the dimeric oxyacanthine-berbamine group to incorporate a free phenolic function at C-6. It is accompanied in *B. baluchistanica* by such unusual alkaloids as the proaporphine-benzylisoquinoline pakistanamine[6], the aporphine-benzylisoquinoline pakistanine derived from the condensation of 2 N-methylcoclaurine units[6], and the isoquinolone-benzylisoquinoline baluchistanamine[7].

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Geranyl acetate and 2-decen-1-ol in the cephalic secretion of the solitary wasp *Sceliphron caementarium* (Sphecidae; Hymenoptera)[1]

A. Hefetz[2] and Suzanne W.T. Batra

Laboratory of Chemistry, National Heart, Lung, and Blood Institute, National Institute of Health, Bethesda (Maryland 20014, USA) and Beneficial Insect Introduction Laboratory, IIBIII, US Department of Agriculture, Beltsville (Maryland 20705, USA), 6 December 1978

Summary. The cephalic secretion of *Sceliphron caementarium* contains a mixture of geranyl acetate and 2-decen-1-ol; the latter has not been described previously in arthropod secretions. The secretion is orally emitted when the wasps are handled, and may serve in defense or alternatively as an aid in roosting aggregation.

Sceliphron caementarium (Drury) is a common solitary sphecid that builds its tubular clay nests on buildings and other structures. There are 4–10 cells per nest, which are provisioned with small spiders[3]. The nests are usually widely spaced due to the intraspecific agonistic behavior of the nesting females, but males and females also have been observed to roost together in aggregations on plants at night[4]. When seeking roosting aggregations, searching *S. assimile* fly slowly and repeatedly upwind until they locate a group[4]; this suggests a scent-following behavior resembling that of *Colletes* bees[5]. Although the pheromones of several of the social or solitary bees and social wasps have been identified, there are no published reports on the chemistry of the various scents produced by the many solitary nesting wasps.

For analysis, females of *S. caementarium* were collected on flowers at Beltsville, MD, and chilled immediately. During handling in the field and in the laboratory the wasps often emitted an odoriferous secretion resembling lemongrass from their mandibles. Their heads were removed, slit to expose the fragrant mandibular glands and extracted with methylene chloride. The extracts were analyzed on a combined gas chromatograph-mass spectrometer (LKB 2091) at 70 ev. on an SE-30 capillary column (0.2 mm × 25 m), a non-polar column, or alternatively on the polar SP-1000 capillary column. In both cases the columns were temperature programmed from 60 °C to 200 °C at 5 °C/min.

2 major components were detected in the mandibular exudates, and identified as geranyl acetate and 2-decen-1-ol (figure 1). On the 10% SP-1000 column geranyl acetate eluted first at 140 °C and 2-decen-1-ol immediately afterwards at 145 °C; on SE-30 the retention times were reversed. The compounds were identified by their fragmentation patterns, and their spectra and retention times compared to those of authentic standards. The mass spectrum of component 2 in the cephalic secretion, identified as 2-decen-1-ol is presented in figure 2.

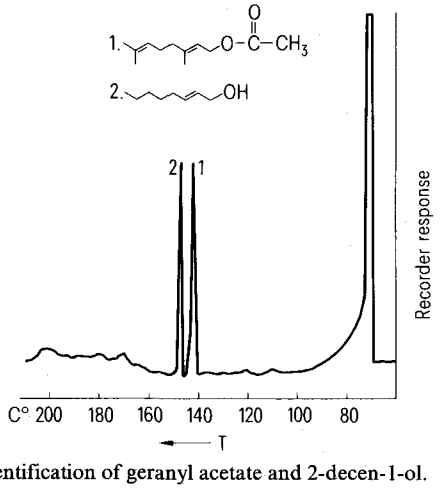

Fig. 1. Identification of geranyl acetate and 2-decen-1-ol.

Geranyl acetate, a compound with a lemon-like odor has been described previously as a minor constituent of the labial gland secretion of *Bombus* males[6] and it is also found in the mandibular glands of 2 ceratinine bees, *Ceratina*[7] and *Pithitis*[8]. In the latter, as in *S. caementarium,* it is released when the insects are handled roughly. On the other hand, 2-decen-1-ol has never been identified from an arthropod source but its acetate is one of the volatile components of honey bee venom[9].

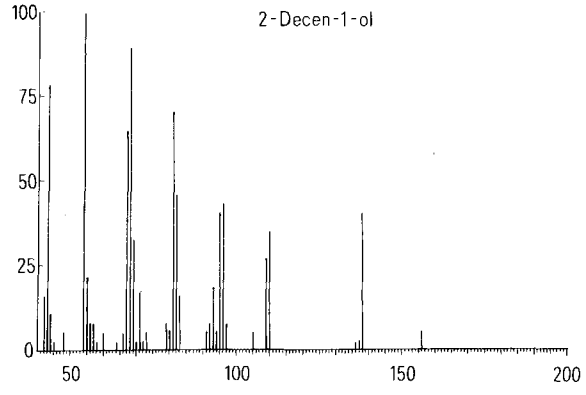

Fig. 2. Mass spectrum of 2-decen-1-ol.

The function of the cephalic secretion of *S. caementarium* has not been determined in field tests. Apparently it is not used in nest site recognition since these wasps locate their nests by visual cues[11]. The odoriferous secretion may aid in the initiation and maintenance of roosting aggregations as is suggested from behavioral data[4], but it may also have a defensive function since it is readily released when the wasps are handled.

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Inhibition of the NADP-linked glutamate dehydrogenase from *Trypanosoma cruzi* by silver nitrate

Silvia M. Juan, Elsa L. Segura and J.J. Cazzulo[1]

CEFOBI, Centro de Estudios Fotosintéticos y Bioquímicos (CONICET, Fundación Miguel Lillo, Universidad Nacional de Rosario), Suipacha 531, 2000 Rosario, (Argentina), and Instituto Nacional de Diagnóstico e Investigación de la Enfermedad de Chagas 'Dr Mario Fatala Chabén', Secretaría de Estado de Salud Pública, Paseo Colón 568, Buenos Aires (Argentina), 5 December 1978

Summary. The purified NADP-linked glutamate dehydrogenase from *Trypanosoma cruzi* was strongly inhibited by silver nitrate. The inhibition was reversed by reduced glutathione, and was modified by the presence of the substrates during preincubation of the enzyme with the inhibitor.

The culture, epimastigote form of *Trypanosoma cruzi,* the parasitic protozoa which causes the American trypanosomiasis, Chagas' disease, contains a NADP-linked glutamate dehydrogenase (L-glutamate: NADP oxidoreductase [deaminating] EC 1.4.1.4)[2]. We have recently purified this enzyme to electrophoretic homogeneity, and studied some of its kinetic properties[3]. A comparative study of the biochemistry of the parasite and its host, looking for differences between them suitable for chemotherapeutic attack, is important for the design of a rational approach to the chemotherapy of Chagas' disease[4]. Since this glutamate dehydrogenase differs in many respects from the similar enzyme in the mammalian host, it has recently been considered among the 'targets with possible chemotherapeutic potential in *T. cruzi*'[4]. Silver nitrate, which is able to react with thiol groups with mercaptide formation, although it may also react with other groups on the enzyme protein[5], is known to inhibit glutamate dehydrogenases from several sources, including mammals[6]. We decided to study the effects of this inhibitor on the purified glutamate dehydrogenase from *T. cruzi,* in order to characterize the enzyme further, and as the first part of a project which will include different sulfhydryl reagents and trypanocide drugs.

Methods. Glutamate dehydrogenase was purified to electrophoretic homogeneity from epimastigotes of *T. cruzi,* Tulahuén strain, as previously described[3]. The enzyme activity was assayed spectrophotometrically at 30 °C, in the presence of 20 mM Tris-acetate buffer, at pH 7 (amination of α-oxoglutarate) or 8 (deamination of L-glutamate)[3]; preincubation conditions are described in the legend to table 2.

Results and discussion. The glutamate dehydrogenase from *T. cruzi* was strongly inhibited by silver nitrate. When the enzyme (0.1 µg) was preincubated for 1 min at 30 °C in 20 mM Tris-acetate buffer, pH 7.0, with concentrations of $AgNO_3$ up to 1 µM, before starting the reaction by addition of the substrates α-oxoglutarate, NADPH and NH_4Cl (final concentrations 0.5, 0.01 and 87 mM, respectively), 50% inhibition was attained at about 0.12 µM $AgNO_3$. Since no special precautions were taken to exclude completely chloride ions from the reaction mixtures, the actual Ag^+ concentrations were probably lower. The inhibition could be reversed by incubation of the $AgNO_3$-inhibited enzyme with reduced glutathione; the glutamate dehydrogenase inhibited up to 85% by preincubation with 0.5 µM $AgNO_3$ was completely reactivated by further preincubation for