pancheri [8]; toutes ces espèces renferment des alcaloïdes à noyau isoquinoléique: aporphines et oxo-aporphines, benzyltétrahydroisoquinoléines, tétrahydroprotoberbérines.

Présent travail. La poudre de tiges est dégraissée par l'éther de pétrole, puis extraite après alcalinisation à l'ammoniaque par $CHCl_3$ au soxhlet jusqu'à réaction de Mayer négative. L'extrait alcaloïdique est purifié par passage en solution aqueuse sulfamique, puis re-extraction par le $CHCl_3$–ammoniacal. Le rendement est de 1,3 g ‰. Le résidu alcaloïdique est chromatographié sur alumine; un seul alcaloïde est isolé (élution par le mélange C_6H_6–$CHCl_3$ 7:3). Cristaux jaunes, peu solubles, $C_{18}H_{11}O_4N$, F 306–308° (décomp.) ($CHCl_3$), $(\alpha)_D = 0$, IR ν C=O conj. 1660 cm^{-1}; S.M.: *m/e* 305 (M^+), 290, 275, 262, 247; RMN (acide TFA, δ ppm): *s* 4,16 (OMe 9), *s* 6,68 (OCH_2O 1,2), *s* 7,55 (H 3), *dd* 7,68 (H 10), *d* 8,08 (*J* 3Hz; H 8), *d* 8,80 (*J* = 9Hz, H 11), système AB 8,48 et 8,77 (H 4 et 5).

L'ensemble de ces constantes physiques et données spectrales permet d'identifier l'alcaloïde isolé à l'oxo-aporphine méthoxy-9 liriodénine ou lanuginosine [6,9,10]. La C.C.M. des autres fractions chromatographiques présente des traînées de taches mal définies, mais aucun autre alcaloïde n'a pu être isolé, ni par CCM préparative, ni par chromatographie sur colonne.

Commentaire. L'échantillon de *X. lemurica* étudié avait été récolté plusieurs années auparavant: il est possible qu'une partie de la lanuginosine isolée provienne de l'oxydation de la noraporphine xylopine, au cours de la conservation. Il a en effet été montré [11], dans le cas du *Magnolia kachirachirai*, que le principal alcaloïde est la glaucine lorsque l'extraction est effectuée aussitôt après la récolte; mais c'est l'oxo-aporphine correspondante qui est isolée à partir d'un échantillon récolté 7 ans auparavant.

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PHENETHYLAMINES OF *ARIOCARPUS SCAPHAROSTRUS**

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Key Word Index—*Ariocarpus scapharostrus*; Cactaceae; alkaloids; hordenine; *N*-methyltyramine; *N,N*-dimethyl-3,4-dimethoxyphenethylamine; *N*-methyl-3,4-dimethoxyphenethylamine.

The most recent taxonomic studies of the cactus genus *Ariocarpus* [1] recognize 6 species, all occurring in the Chihuahuan Desert of Texas and Mexico. Members of this genus have been used medicinally and have been reported as toxic [2]. Some *Ariocarpus* species have also been called 'peyote', suggesting a similarity to *Lophophora williamsii* in psychoactive or alkaloidal properties [2,3].

The common occurrence of phenethylamines in cacti [4] is also valid for *Ariocarpus*. So far, phytochemical studies have revealed the presence of

* Cactaceae Alkaloids 22.

N-methyl-3,4-dimethoxyphenethylamine [5,6], hordenine [5,7], *N*,*N*-dimethyl-4-hydroxy-3-methoxyphenethylamine [7], *N*-methyltyramine [8] and *N*-methyl-4-methoxyphenethylamine [9] in various species of this genus.

No previous alkaloid studies have been reported regarding *A. scapharostrus* Bödeker. This species is extremely rare and only known from one locality in the mountains of Nuevo León [1]. We now report the identification of four phenethylamines in this cactus.

Alkaloid extraction was followed by fractionation on an ion-exchange column into phenolic and non-phenolic alkaloids [4]. These fractions were studied by GC and GC–MS. Comparison with synthetic reference materials allowed us to identify hordenine and *N*-methyltyramine in the phenolic fraction, hordenine being the major compound. In the non-phenolic fraction *N*,*N*-dimethyl-3,4-dimethoxyphenethylamine and *N*-methyl-3,4-dimethoxyphenethylamine were identified.

Hordenine, *N*-methyltyramine and *N*-methyl-3,4-dimethoxyphenethylamine have been isolated from several genera of the Cactaceae [6,8,10], but *N*,*N*-dimethyl-3,4-dimethoxyphenethylamine has been more elusive. This compound was first described from nature as the main alkaloid of *Echinocereus merkeri* [10], and was recently identified by us in extracts of *Coryphantha greenwoodii* [11]. The present paper is the first recorded occurrence of *N*,*N*-dimethyl-3,4-dimethoxyphenethylamine in a species of *Ariocarpus*, although closely related alkaloids occur in the genus [7].

* Editor, *Cactus and Succulent Journal of America*.

EXPERIMENTAL

Plant material. Living plants of *Ariocarpus scapharostrus* Bödeker were obtained from Abbey Garden, Reseda, California, and the identification was confirmed by Mr. Charles Glass*. A herbarium specimen has been placed in the Department of Pharmacognosy, Biomedicum, Uppsala.

Isolation of alkaloids. Ten plants (420 g) were homogenized in EtOH. Filtered extract was evaporated to dryness, dissolved in 3% HOAc and washed with $CHCl_3$. The aq phase was basified with NH_3 conc (pH 10) and the alkaloids were extracted with $CHCl_3$ and $CHCl_3$–EtOH (3:1). The crude alkaloids were purified on an acidic diatomaceous earth (Celite 545) column (yield 50 mg; 0·012%) and resolved into phenolic and non-phenolic fractions with an ion-exchange column (IRA-400) as described previously [4]. 80% (40 mg) of the alkaloids were recovered in the phenolic fraction.

Identification of alkaloids. The phenolic and non-phenolic fractions were chromatographed by GC on 2 columns (5% SE-30 and 5% XE-60 on Gas Chrom Q, 100–120 mesh, col. temp. 150°) for preliminary information [4]. MS were obtained using a combined GC–MS instrument (ion source 2·5 kV, electron energy 70 eV and ionization current 60 μA). Column: 3% XE-60 on Gas Chrom Q, 100–120 mesh, 150°.

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FLAVONOIDS FROM *COCHLOSPERMUM GILLIVRAEI*

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Key Word Index—*Cochlospermum gillivraei* Benth; Cochlospermaceae; apigenin; naringenin; (+)-afzelechin; naringenin 7-glucoside; apigenin 7-glucoside.

Plant. The bark of *Cochlospermum gillivraei*, collected in Stuart, Queensland, Australia, September, 1962 and 1965.

Previous work. None. The flavonoids myricetin,