Pergamon

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A LONG CHAIN ALCOHOL FROM *ARGEMONE MEXICANA*

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Key Word Index—*Argemone mexicana*; papaveraceae; mexican poppy; prickly poppy; alcohols; triacontan-11-ol.

Abstract—An extract of aerial parts of *Argemone mexicana* afforded a new monohydric alcohol, triacontan-11-ol, in addition to a known dihydric alcohol, triacontane-6,11-diol. The structures were elucidated on the basis of spectral, analytical and degradative experiments. © 1998 Elsevier Science Ltd. All rights reserved

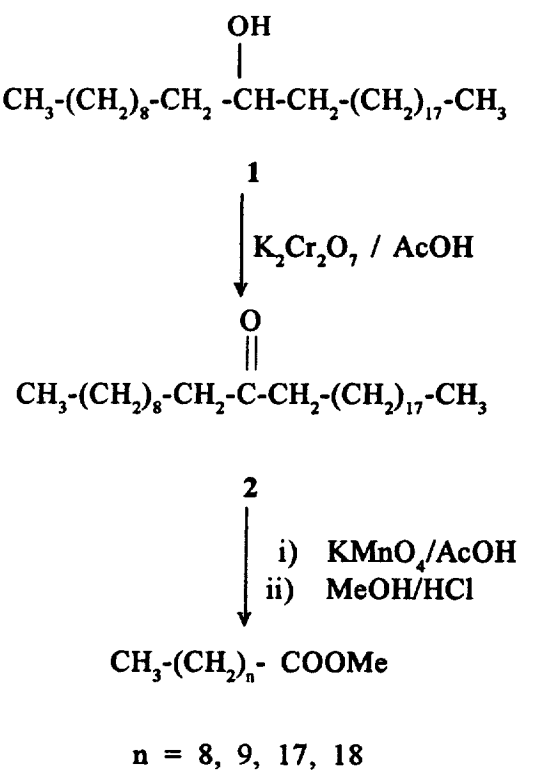
INTRODUCTION

Argemone mexicana L. (Papaveraceae), an erect prickly annual herb up to 1.2 m in height is a very common weed in agricultural and waste lands found throughout India up to an altitude of 1500 m. Isoquinoline alkaloids, flavanoids, phenolics, sugars, fatty acids, alcohols, tannins, resins, amino acids and mineral elements have been isolated from this plant [1–8]. Reinvestigation of aerial parts of this species afforded a known diol, along with a new monohydric alcohol.

RESULTS AND DISCUSSION

The methanolic extract of the aerial parts of *A. mexicana* yielded triacontane-6,11-diol [2] and a new monohydric alcohol (**1**). The alcohol (**1**), mp 82°, was assigned the molecular formula $C_{30}H_{62}O$ on the basis of its microanalytical data. It showed IR absorbance (KBr) at 3300 cm^{-1} suggesting the presence of –OH group(s). Its ^1H NMR spectrum (400 MHz, $CDCl_3$) displayed signals at δ 0.88 (6 H, *t*, $J = 6.8$ Hz, two terminal CH_3), 1.26 (50 H, *brs*, 25 CH_2), 1.43 (4 H, *m*, two CH_2 attached to carbinolic carbon) and 3.58 (1 H, *m*, C*H*–OH) indicating a long-chain aliphatic alcohol. Its ^{13}C NMR spectrum displayed signals at δ 14.1 (C-1, C-30), 22.7 (C-2, C-29), 25.7 (C-9, C-13), 29.4 (C-4, C-27), 29.7 (C-5 to C-8, C-14 to C-26), 31.9 (C-3, C-28), 37.6 (C-10, C-12) and 72.1 (C-11). The assignments of ^{13}C NMR chemical shifts were in good agreement with calculated values [9].

Dichromate oxidation [10] of **1** afforded an amorphous ketone (**2**), $C_{30}H_{60}O$, mp 49°, υ_{max} 1725 cm^{-1} for aliphatic C=0. The ^1H NMR signals were displayed at δ 0.88 (6 H, *t*, $J = 6.8$ Hz, two terminal CH_3), 1.25 (46 H, *brs*. 23 × CH_2), 1.40 (4 H, *m*, two CH_2 at β-positions with respect to carbonyl) and 2.34 (4 H, *t*, $J = 7$ Hz, two CH_2 adjacent to carbonyl). Permangnate oxidation [11] of the ketone (**2**) followed by esterification of the resulting carboxylic acids mixture with MeOH–HCl afforded methyl decanoate, methyl icosanoate, methyl undecanoate and methyl nonadecanoate. These acid esters were identified by co-



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GLC with authentic samples. This evidence confirms the structure of the ketone (**2**) as triacontan-11-one. The structure of the ketone (**2**) and spectral data of alcohol (**1**) confirm the later as triacontan-11-ol.

Triacontane-10,11-diol has been reported previously from flowers of its sister species *Argemone aenea* Ownb. by Dominguez and Barragan [12] and from *A. aurantiaca* Ownb. by McCullough [13]. The isolation of monohydric alcohol **1** from same genus has a significance from a chemotaxonomic view point. Biochemical and physiological significance may also be attributed to alcohol (**1**), as the related carboxylic acids, 11-hydroxytriacontanoic acid and 11-oxotriacontanoic acid have been isolated from seeds of *A. mexicana* [1].

EXPERIMENTAL

Aerial parts of fr. plant material (1 kg) collected in the vicinity of Hisar were chopped and dipped in MeOH (11) at room temp. for 48 hr. The extract was filtered and conc. under red. pres. During concn., a white solid was deposited which was filtered and found to contain a mixture of products on TLC (silica gel). Two major constituents were separated by CC (silica gel) and further purified by recrystallization from MeOH to afford 20 mg triacontane-6,11-diol and 100 mg triacontan-11-ol.

Dichromate oxidation [10] of triacontan-11-ol and permangnate oxidation [11] of resulting triacontan-11-one were carried out using reported procedures. The fatty acid mixture obtained was esterified by refluxing for 2 hr in MeOH–HCl and subjected to GC analysis under standard operating conditions [14]. The Me esters were identified by co-GC with authentic samples.

Mps are uncorrected. IR were recorded in KBr and frequencies are expressed in cm^{-1}. ^1H and ^{13}C NMR spectra were recorded at 400 and 100 MHz, respectively, in $CDCl_3$ and chemical shifts were recorded on the δ scale downfield relative to TMS. Compounds were analyzed for C and H within 0.4% of theoretical values.

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