

## Isolation of Esculentic acid, A New Triterpene from *Phytolacca esculenta*

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*Phytolacca esculenta* VAN HOUTTE (Phytolaccaceae) is described in folk medicine to be useful in the treatment of rheumatism. The isolation of two triterpene acids, jaligonic acid and phytolaccagenin, from this plant has been previously reported.<sup>1,2)</sup> In continuing studies of the terpenoid constituents, a new minor compound was encountered.

This compound,  $C_{30}H_{46}O_6$ , mp  $>360^\circ$ ,  $[\alpha]_D^{25} = +85.6^\circ$  (c=0.23 in EtOH),  $\lambda_{max}^{EtOH}$  204 nm (log  $\epsilon$ , 3.70), gave pink color in Liebermann-Burchard test and its ir spectrum showed a hydroxyl peak at  $3150\text{cm}^{-1}$ , a carboxyl peak at  $1701\text{cm}^{-1}$  and trisubstituted double bond peak at  $825\text{cm}^{-1}$ .

The compound was esterified when dissolved in MeOH and treated with ethereal diazomethane to give dimethylester,  $C_{32}H_{50}O_6$ , mp  $151-153^\circ$ ,  $[\alpha]_D^{25} = +86.2^\circ$  (c=0.225 in EtOH), and its ir spectrum showed two peaks at  $1710$  and  $1730\text{cm}^{-1}$  due to two ester groups. The dimethylester was acetylated with acetic anhydride-pyridine to give diacetate,  $C_{36}H_{54}O_8$ , mp  $100-103^\circ$ , which was homogeneous in tlc but failed to crystallize. This compound showed in ir acetoxyl peak at  $1235\text{cm}^{-1}$ , but did not absorb in the region corresponding hydroxyl group.

The compound was shown to be unsaturated by means of tetranitromethane and in reaction with perbenzoic acid the equivalent of one double bond was consumed by dimethylester diacetate. On treatment with  $\text{Br}_2\text{-HOAc}$  the compound gave a monobromo- $\gamma$ -lactone, mp  $231-233^\circ$ , and its ir spectrum showed the peak at  $1767\text{cm}^{-1}$  ( $\gamma$ -lactone).

On the basis of the above preliminary experiments, this compound is supposed to be a dihydroxy-olean-12-ene-dioic acid.

Dihydroxydicarboxylic acids of the oleanane series are very rare—only three

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compounds are known up to date, namely, barringtogenic acid,<sup>3)</sup> mp 332-334°,  $[\alpha]_D = +72^\circ$ , medicagenic acid,<sup>4)</sup> mp 349-350°,  $[\alpha]_D = +111^\circ$ , and the acid from *Saponaria officinalis*, mp 250-255° (dimethylester),  $[\alpha]_D = +42^\circ$ . However, physical properties reported for them and their derivatives differ from those of the compound isolated from the roots of *P. esculenta*. Therefore, this compound seems to be a new triterpenoid and the author now proposes to name it as esculentic acid. The structure will be the subject of a later communication.

### REFERENCES

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