

## Triterpene Glycosides of *Tupidanthus Calyptratus*

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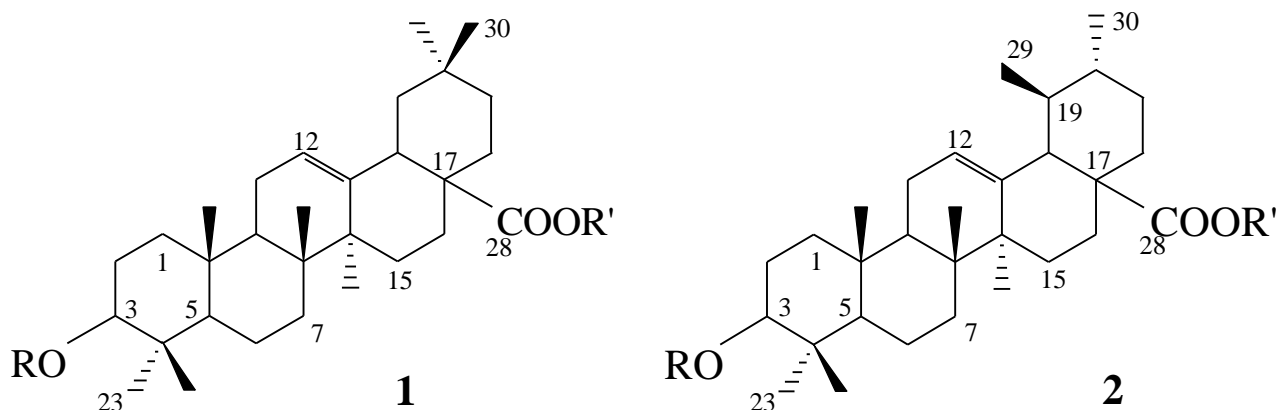
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*Tupidanthus kalyptratus* Hook. et Thoms. (*Araliaceae*) from Upper Burma is one of the most ancient species of *Araliaceae* plants. It was very interesting to study the glycoside composition of this plant from a philogenetic point of view.

Dried plant material (leaves) was powdered, extracted with 80% ethanol and subjected to column chromatography on SiO<sub>2</sub> with chloroform-ethanol-water eluent. Two main glycosides were isolated and on the basis of chemical methods (acid and alkali hydrolysis) and indirect TLC comparison identified with 3-O- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)-O- $\alpha$ -L-arabinopyranoside of oleanolic acid and its 28-O- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 4)-O- $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 6)-O- $\beta$ -D-glucopyranosyl ester (**1**).

However additional <sup>1</sup>H- and <sup>13</sup>C-NMR spectral analysis of these glycosides show that both of them is a pair of two glycosides in near 1:1 molar ratio that differs only in its aglycon parts. In each pair one of them is above mentioned oleanolic acid glycoside and another belong to ursan series (namely ursolic acid glycosides (**2**) bearing the same sugar moieties). These pairs of isomeric glycosides are chromatographically unseparable and can be detected only by NMR (differences in chemical shifts of tertiary methyl groups in PMR and of double bond and E-ring C-atoms in <sup>13</sup>C-NMR).



It should be noted that ursolic acid glycosides are very rare in nature and were found only in *Ilex paraguariensis* (*Aqifoliaceae*) and *Cynara cardunculus* (*Asteraceae*).