

## A LEPTOSIDIN GLYCOSIDE FROM LEAVES OF *CYPERUS SCARIOSUS*

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**Key Word Index**—*Cyperus scariosus*; Cyperaceae; aurone; leptosidin 6-glucosylrhamnoside.

**Abstract**—Phytochemical examination of the leaves of *Cyperus scariosus* resulted in the isolation and identification of a new glycoside, leptosidin 6-*O*- $\beta$ -D-glucopyranosyl-*O*- $\alpha$ -L-rhamnopyranoside.

Phytochemical examination of this plant was undertaken because little work has been done on the leaves [1, 2]. A phenolic glycoside, mp 232–234°, was isolated, which, upon hydrolysis with 7% H<sub>2</sub>SO<sub>4</sub> in EtOH yielded an aglycone, glucose and rhamnose. The aglycone crystallized from petrol–Me<sub>2</sub>CO as orange-yellow crystals, mp 253–255°. (Found: C, 63.40; H 3.8. Calc. for C<sub>16</sub>H<sub>12</sub>O<sub>6</sub>, C, 63.5, H 4.0%). It changed colour from yellow to orange-red and finally to red with alkali and produced a bright red colour with conc. H<sub>2</sub>SO<sub>4</sub>, indicating the presence of an aurone. The aglycone showed the presence of one methoxyl group (Zeisel) and also afforded a triacetate on acetylation with (Ac<sub>2</sub>O/pyridine). Methylation of the aglycone gave a trimethyl ether with mp 155–156° which on oxidation with KMnO<sub>4</sub> yielded veratric acid, mp 170°, which indicates the presence of free hydroxyls at 3' and 4'. The IR spectrum showed prominent peaks at 3336 (OH), 2901 (—C—H) stretch) 1681 (—C—C—O—stretch) 1605, 1563, 1441 (ring system) and 1283 cm<sup>-1</sup> (—C—O—C vibration). The UV shift of the aglycone with NaOAc and AlCl<sub>3</sub> was exactly similar to that of leptosidin [3, 4] while the glycoside did not show a UV shift for a free 6-hydroxyl [5]. Therefore the aglycone was identified as leptosidin, which was confirmed by co-TLC and mps with an authentic sample [6]. Periodate oxidation of the glycoside consumed 3.2 mol with the liberation of 1.3 mol of formic acid/mol of the glycoside indicating the presence of a disaccharide with both sugars in the pyranose form. The glycoside on partial hydrolysis (with 2% H<sub>2</sub>SO<sub>4</sub>) gave glucose, suggesting that it was the terminal sugar and that rhamnose is linked with the aglycone at position 6. The permethylated glycoside [7] on acid hydrolysis yielded 2,3-di-*O*-methyl-L-rhamnose (by co-TLC with authentic) and 2,3,4,6-tetra-*O*-methylglucose (mps and co-TLC with an authentic sample) indicating that the glucopyranose unit is joined to the rhamnopyranose unit by a 1 → 4-linkage. The enzymatic hydrolysis [8] of the glycoside showed a  $\beta$ -linkage between the two sugars and an  $\alpha$ -linkage between the aglycone and the rhamnose.

Therefore the structure of new glycoside was assigned as leptosidin 6-*O*- $\beta$ -D-glucopyranosyl-*O*- $\alpha$ -L-rhamnopyranoside.

### EXPERIMENTAL

Air-dried leaves (2 kg) of *Cyperus scariosus* were obtained from Saugar region and identified through the courtesy of the Botany Department, University of Saugar. The leaves were extd with 95% EtOH under reflux for 20 days. The extract (2.5 l.) was concd under red. pres. to 125 ml and stored in a refrigerator whereupon a syrupy green deposit was formed. The filtrate was poured into distilled water (500 ml) with continuous stirring. The water-soluble portion was extd with EtOAc which gave the glycoside. It was purified on a column of si gel and cryst. as yellow needles from petrol–Me<sub>2</sub>CO, mp 232–234°. The homogeneity of the glycoside was checked by PC in *n*-BuOH–HOAc–H<sub>2</sub>O (yield 0.031%).

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