Pak.J.Bot., 32(1): 5-6, 2000.

# POLLEN MORPHOLOGY OF *GALANTHUS ELWESII* HOOKER (*AMARYLLIDACEAE*)

**NEVIN FERDA SAHIN**

*Department of Science Education,*
*K.T.Ü. Fatih Educational Faculty, 61335 Sögütlü-Trabzon, Turkey.*

**Abstract**

Pollen morphology of *Galanthus elwesii* Hooker (*Amaryllidaceae*) was examined by light, scanning and transmission electron microscopy. It was compared with that of members of *Galanthus ikariae* Baker and *G. rizehensis* Stem.

## Introduction

*Galanthus elwesii* was discovered by Balansa at Yamanlar Mountains in Turkey in 1854 (Hooker, 1975). It was later reported from the Mediterranean, Marmara and Aegean regions of Turkey (Byfield & Atay, 1992). The pollen morphology of *G. ikariae* and *G. rizehensis* has been studied by Sahin *et al.*, (1997). The present report describes the pollen morphology of *G. elwesii* from Turkey as examined by light, scanning and transmission electron microscopy and compared with that of *G. ikariae* and *G. rizehensis*.

## Materials and Methods

Samples of *G. elwesii* A7 (Trabzon: Sürmene, Sahin 3) collected during March and April 1993 were kept in the herbarium at Karadeniz Technical University. Pollen grains were prepared using the technique of Wodehouse (1935) and Erdtman (1960). Light microscope studies were made using a Leitz-Ortholux microscope with an apochromatic oil immersion objective (X100) and periplan eye piece (X10). Measurements were made on 20 pollen grains. For transmission electron microscopy, acetolysed pollen grains were fixed in $O_sO_4$, stained with uranyl acetate and embedded in eponeraldite (Skvarla, 1966; Reynolds, 1963) and examined using a Jeol 100CXII transmission electron microscope (TEM). For scanning electron microscopy (SEM), non acetolysed pollen grains were transferred to stubs and coated with gold. The terminology used in this study is that of Erdtman (1969) and Faegri-Iverson (1975).

## Result

Pollen grains bilaterally symmetrical, isopolar, monocolpate, pollen shape subprolate, polar view 26.34$\mu$ (W), 26.38$\mu$ (E), equatorial view 19.73$\mu$ (W), 20.36$\mu$ (E). Exine 1.76$\mu$ (E), ektexine: 1.8$\mu$ (E) thick. Tectum subtectate 0.7$\mu$ thick. Columella rare; 0.7$\mu$ long foot layer continuous 0.3$\mu$ thick. Endexine loose 0.27$\mu$ (E) thick, intine 1.16$\mu$ (W) thick. Colpi with acute ends, margin even: Clg=21.32$\mu$ (W), 14.85$\mu$ (E). Clt=1.97$\mu$ (W), 1.56$\mu$ (E). Ornamentation retipilate (Fig. 1).

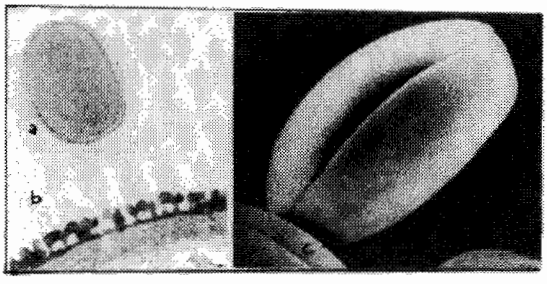

Fig. 1. a. A non-acetolysed pollen grain in equatorial view LM x 1000.
b. The section showing exine layers TEM x 29000.
c. A general view of a grain SEM x 3000.

## Conclusion

Pollen grains bilaterally symmetrical, isopolar, monocolpate, subprolate, ornamentation retipilate. In *G. elwesii* and *G. ikariae* subprolate pollen grains were observed, while in *G. rizehensis* prolate pollen grains were recorded. The dominant characters of the pollen morphology are monocolpate grains and acute-ended colpi.

According to morphological results, while pollen dimensions and colpi length of *G. elwesii* and *G. ikariae* are the same, the measurements of exine and thick foot layer, thin endexine layer, tectum and columella are different in the three species (Sahin *et al.*, 1997).

### Reference

Byfield, A. and S. Atay. 1992. Kardelen (*Galanthus*). *Kelaynak'tan Haberler.*, 45: 17.

Erdtman, G. 1960. The acetolysis method, a revised description. *Svensk. Bot. Tidskr.*, 54: 561-564.

Erdtman, G. 1969. *Handbook of palynology*. Hafner Press. New York.

Faegri, K. and J. Iverson. 1975. *Textbook of pollen analysis*. Hafner Press, New York.

Hooker, J.D. 1875. *Galanthus elwesii*. *Curt. Bot. Mag.*, 101: 166-174.

Reynolds, E.S. 1963. The use of lead citrate at high pH as an Electron Opaque Stain in Electron Microscopy. *Stain. Tech.*, 43: 139-144.

Skvarla, J.J. 1966. Techniques of pollen and spore electron microscopy Part I. *Oklahoma Geal. Notes*, 26: 179-186.

Sahin, N.F., N. Sakiyan and M.N. Pinar. 1997. An investigation on the pollen morphology of *Galanthus ikariae* Baker and *Galanthus rizehensis* Stern (Amaryllidaceae). *Tr. J. of Botany*, 21: 305-307.

Wodehouse, R.P. 1935. *Pollen Grains*. Mc. Graw Hill Press, New York.

(Received for publication 20 March 1999)