

FINE STRUCTURE OF QUERCUS POLLEN FROM THE HOLOCENE SEDIMENTS OF THE SEA OF JAPAN

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The material comes from marine bottom sediments from the south of the sea of Japan. Dispersed *Quercus* pollen from eight palynological assemblages of two cores were studied. Holocene *Quercus* pollen were studied with application of LM and SEM by a number of authors, showing that exine sculpturing is an important tool for distinguishing *Quercus* sections, group of species or probably even species on the SEM level (e.g., see a review in Naryshkina, Evstigneeva, 2009; Evstigneeva, Naryshkina, 2012). This study aims to reveal *Quercus* diversity in studied assemblages that gives us additional information both for systematics and palaeogeography. A combination of two methods was applied: only SEM study of a greater number of pollen grains and a subsequent study by LM, SEM and TEM of 20-25 grains from each assemblage. The former allows to identify main sculpture types of *Quercus* pollen occurring in the assemblage, and a detailed study of morphology and ultrastructure of each of the main types was carried out using the latter method. Several sculpture types have been distinguished in the studied material, they were compared and referred to similar sculpture types of pollen grains belonging to modern evergreen and deciduous *Quercus* species. Other pollen features were also considered, on the whole, most important pollen features for *Quercus* pollen include pollen size (LM), sculpture elements, their size and distribution (SEM), relative portion of the tectum and its outer contour (which corresponds to the sculpture type) and the thickness of the foot layer as well as the degree of its discontinuity (TEM). A combined analysis of published and original data of fossil and modern *Quercus* pollen shows perspectives to a more comprehensive identification of the pollen. More data of fossil *Quercus* pollen from different regions using electron microscopy are needed to improve the accuracy of the identification.

References

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