

Comparative study of germination of wheat grain distinguished by pericarp anthocyanin coloring under conditions of natural and induced aging

Gordeeva E.I.¹, Shoeva O.Yu.¹, Khlestkina E.K.²

¹ Institute of Cytology and Genetics of the Siberian Branch of RAS,
Novosibirsk, Russia

² N.I.Vavilov All-Russian Institute of Plant Genetic Resources, St.
Petersburg, Russia

E-mail: elgordeeva@bionet.nsc.ru

Anthocyanins are biologically active secondary metabolites of plant. As natural antioxidants, anthocyanins neutralize cell-damaging reactive oxygen species under the influence of adverse environmental factors. In wheat (*Triticum* L.), despite the relevance of research, the relationship between the synthesis of secondary metabolites with protective adaptive functions and the molecular and genetic mechanisms of seed viability after long-term storage remains unstudied. To date, there is a well-characterized set of wheat genotypes based on the model variety Saratovskaya 29, which presents a different combination of alleles at the loci *Pp3* and *Pp-D1* (*Purple pericarp*), determining anthocyanin coloring of coleoptiles and pericarp. Such lines, which differ from each other only in anthocyanin coloration (and are similar in all other traits), are best suited for comparative physiological studies. The results showed a neutral role of anthocyanins in long-term seed longevity for 7-9 years under natural conditions of +20°C and +25°C. It was differ from the results obtained after artificial induced aging with elevated temperature of 48°C and 100% humidity for 72 hours (ISTA seed testing), where germination of anthocyanin-stained seeds was 20% higher than that of lines without anthocyanin pigment.

The study was supported by RSF 21-76-10024.

The main publications of authors on the subject of the abstract:

Gordeeva, E. I., Shoeva, O. Y., & Khlestkina, E. K. Marker-assisted development of bread wheat near-isogenic lines carrying various combinations of purple pericarp (*Pp*) alleles // *Euphytica* (2015) 203: 469-476. doi:10.1007/s10681-014-1317-8