



Figure 1.

correspondence of Pfam and SCOP superfamilies was obtained for each superfamily covering about 61% of Pfam families. The structural census (Chothia, 1992; Caetano-Anollés, Wang, Caetano-Anollés, & Mittenthal, 2009) was revisited and distribution of homologues across superfamilies, folds and classes were analyzed. About 27% of NR database and 41% of the taxonomy database (from NCBI) were covered in the study. The results from the above analysis have been presented in the form of a database named GenDiS+ (Pugalenthi, 2005; Iyer, 2018). Profiles derived from the alignments of superfamily homologues can be used in sequence searches and for assigning structural domains to sequences (Figure 1).

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111. Germination response of *Triticum aestivum* seeds to different exposure times of low-intensity EMI treatment

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It is known that exposure to electromagnetic fields (EMF) of millimeter range or extremely high frequencies (EHF) has beneficial effects on seed germination and plant growth (Nauaiene et al., 2017). This application in contrast to chemical methods of seeds pre-germination treatment is noninvasive and environmentally appropriate technology what is very important for farming industry.

The study aimed to investigate the effects of pre-sowing seed treatment with physical factor-EHF EMF (50.3 GHz frequency, 3–10 min) on seed germination and seedling performance. For this, seeds of wheat (*Triticum aestivum* L. of 'Bezostaya' variety) were imbibed in water for 12 hour then treated once with EMF with 50.3 GHz frequency, for 3, 5 and 10 min., then left to germinate on wet filter paper in Petri dishes at 23 °C in the dark for 8 days. The irradiation was performed using the generator G4-141 type (State Scientific-Production Enterprise 'Istok', Russia) with working interval of 37.50–53.57 GHz and power flux density 64 μWt/cm². The germination rate, seedling length and fresh weight were determined at the third and seventh day after seeds sowing. Our findings show that the most positive germination effects were in short-time EMI treatments (3 and 5 min, respectively) groups. The germination tests revealed that EMI-treatments induced increase in germination rate in seeds as compared to control. Thus, the germination rate at the third day after sowing was significantly ($p < 0.05$) higher (by 12% and by 9%) for EMF-exposed seeds, while on the seventh day these indexes did not significantly differ from control. On the other hand, the longer time EMI –treatment (10 min) did not change germination rate for both studied days after sowing. Data also show that seedlings grown from seeds EMI-treated (5 and 10 min) groups had increased seedling weight (up to 12%) and length (up to 8%) compared to control.

References

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