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INTRODUCTION

There is only little information available in the literature about the effect of reversible electropermeabilization on plant cells and tissues. We here present a first exploration of the effect of pulsed electric fields (PEF) on barley seed germination. PEF is used as a physical means of stressing the seeds and affect their metabolism.

MATERIALS AND METHODS

1. Barley seeds were steeped in water at 20°C for 24h until their water content was about 40%
2. Twelve seeds were treated with voltages ranging from 280 to 1500 V/cm; 1ms. The number of pulses varied from 10 to 50, separated 2 s.
3. After PEF treatment, seeds were germinated in saturated air at 20°C inside an isothermal calorimeter to measure metabolic heat during germination. The size of the roots were also measured

RESULTS AND DISCUSSION

All PEF-treated seeds present shorter rootless than the controls (**blue dots**). Interestingly, the overall metabolic activity of the seeds (**total metabolic heat, Q, red squares**) was not statistically significant affected by the PEF treatment, suggesting that metabolic processes associated with root elongation were affected without affecting the viability of the embryo.

CONCLUSIONS

PEF applied in the millisecond range affects the root elongation process in barley seeds without significant changes of their overall metabolic activity. Deeper metabolic studies at the metabolome and proteome level must be done to understand this effect.

