Effect of low-plasma treatment for GABA content and germination of barley

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Low-plasma has been recently investigated in the field of agricultural science as an alternative to the traditional pre-sowing seed treatment such as physical scratching, heat treatment and chemical treatment. The influence of low-plasma treatment on barley seeds(*Hordeum vulgare* L.) has been investigated by using a surface dielectric barrier discharge at atmospheric pressure and room temperature. Naked barley cultivars were Saessal and Saechal, covered barley cultivars were Hyeyang and Quenal1. We investigated the seed germination, surface morphology and functional material changes. Plasma treatment induced significant changes in the seed surface which was related to water permeability into the seeds. Seed surface was cracked and eroded after plasma treatment. Germination ratio was not significantly different according to plasma treatment. Hypocotyl and root length of barley that was treated for 3 minute with plasma increased. But they did not show the any tendency. GABA content of Saessal and Heyang did not show a big difference by plasma treatment, while in Saechal and Quenal showed an increasing tendency. After 3 germination days, GABA content increased approximately five times. DPPH was slightly decreased as plasma treatment time increased in seed and germination. However, the amount was different according to crops.

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