

## عنوان مقاله:

Beta glucanase (Bgn<sup>۱۳.۱</sup>) expressed in transgenic Brassica napus confers antifungal activity against Sclerotinia sclerotiorum

## محل انتشار:

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## خلاصه مقاله:

Brassica napus is an important oilseed crop and the yield loss due to fungal disease stem rot caused by Sclerotinia sclerotiorum is a serious problem in cultivation of this crop. The pathogenesis-related (PR) protein, glucanase, hydrolyzes a major cell wall component, glucan, of the pathogenic fungi and acts as a plant defense barrier. In this study, a  $\beta$ -1,3-glucanase (bgn<sup>۱۳.۱</sup>) gene was isolated from the biocontrol fungus Trichoderma virens-۱۰ (showing the high  $\beta$ -glucanase activity) and cloned in pUC19 cloning vector. The cloned fragment was confirmed by molecular analysis and showed to contain two short introns, ۵۲ and ۵۷ bp and an open reading frame coding ۷۶۱ amino acids. The bgn<sup>۱۳.۱</sup> gene was over-expressed under the CaMV35S promoter in B. napus, R line Hyola ۳۰۸. Transformation of cotyledonary petioles was achieved by pBIKH1 containing bgn<sup>۱۳.۱</sup> gene via Agrobacterium tumefaciens LBA4404. The insertion of transgene was verified by the polymerase chain reaction (PCR) and genomic DNA Southern dot blotting in T<sub>0</sub> generation. RT-PCR analysis indicated that the transgenic canola plants were able to transcribe the  $\beta$ -1,3 glucanase gene. Also, we used transgenic over-expression approach in order to investigate antifungal activity of expressed Bgn<sup>۱۳.۱</sup> on S. sclerotiorum. The heterologous expressed Bgn<sup>۱۳.۱</sup> of line # ۷ and line # ۱۰ compared with other lines showed stronger inhibition against hyphal growth of S. sclerotiorum with

## کلمات کلیدی:

bgn<sup>۱۳.۱</sup>, Brassica napus, glucanase enzyme, Sclerotinia sclerotiorum, Transgenic plants, Trichoderma virens

## لینک ثابت مقاله در پایگاه سیویلیکا:

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