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**Novel Triazole Derivatives as a Potential 7-keto-8-aminopelargonate Synthase Inhibiting Herbicide**

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**ABSTRACT**

The genetic and chemical validation of potential herbicide target was investigated with 7-keto-8-aminopelargonic acid synthase (KAPAS) and 40 triazole derivatives in vitro and in vivo. KAPAS activity was completely inhibited by these synthesized triazole compounds with an IC\(_{50}\) of 48 to 592 μM in vitro. 40-day old *Arabidopsis thaliana* plants were completely killed by representative compound KHG23844 at the application rate of 250 g ha\(^{-1}\) foliar treatment in a greenhouse condition. Foliar application of 1,000 g ha\(^{-1}\) KHG23844 induced 2.3-fold higher L-alanine accumulation in the treated *A. thaliana* plants. Foliar supplement of 1 mM biotin at 1 and 2 days before KHG23844 application effectively rescued the growth inhibition of *A. thaliana* plant treated with KHG23844. With these results, representative compound KHG23844 and their derivatives might be potential KAPAS inhibiting herbicide.

**Key words:** 7-keto-8-aminopelargonic acid synthase (KAPAS), L-alanine, triazoles.