

A Structure-Activity Relationship Study on a Natural Germination Inhibitor, 2-Methoxy-4-vinylphenol (MVP), in Wheat Seeds to Evaluate its Mode of Action

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The first aim of the present study was to evaluate which structural elements of the 2-methoxy-4-vinylphenol (MVP) molecule (**1**) are responsible for its observed activity as germination inhibitor in wheat seeds. To find its mode of action, a series of compounds with varying functional moieties and substitution patterns were prepared and evaluated for their inhibitory activity. This systematic competitive inhibition study characterized two criteria for the effective increase of the inhibiting ability: (i) *ortho* substitution to each of the hydroxy and methoxy groups; (ii) alkene moiety on the ring. Understanding how the structure of natural compounds relates to their inhibition function is fundamentally important and may help to facilitate their application as novel inhibitors to restrain preharvest sprouting (PHS) in wheat fields. In this regard, in MVP and its natural analogues **8** and **9** as the most active inhibitors, the *ortho* substitution of hydroxy and methoxy groups plays a key role in their activity and, as well, the alkene moiety influences the activity significantly.

Key words: 2-Methoxy-4-vinylphenol (MVP), Germination Inhibitor, Structure-Activity Relationship