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ProductInformation

Anti-AtMPK3
Developed in Rabbit
Affinity Isolated Antibody

Product Number **M 8318**

Product Description

Anti-AtMPK3 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 359-370 at the C-terminus of *Arabidopsis thaliana* MPK3 (AtMPK3),[1a] conjugated to KLH. This sequence is specific to AtMPK3 (not found in the other 20 known AtMPK isoforms). It has limited homology (58% identity) to the AtMPK6 isoform,[1b] and shares significant homology (67% identity, continuous epitope) with the *Nicotiana tabacum* ortholog WIPK.[1c] The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-AtMPK3 recognizes AtMPK3. Applications include immunoblotting (43 kDa). Staining of AtMPK3 in immunoblotting is specifically inhibited with AtMPK3 immunizing peptide (*Arabidopsis thaliana*, amino acids 359-370).

Mitogen-activated protein kinase (MAPK) cascades are among the most conserved signal transduction pathways in eukaryotes.[2, 3] MAPKs regulate a variety of cellular activities ranging from gene expression, cell proliferation, motility, metabolism, and apoptosis. Homologs of MAPKs as well as upstream kinases have been found in vertebrates, invertebrates, fungi, yeast, and plants. Activation of MAPKs requires phosphorylation on threonine and tyrosine residues in the kinase regulatory domain by upstream dual specificity kinases, termed MAPK kinases (MAPKKs/MEK). MAPKKs, in turn are activated through phosphorylation by a highly diverse group of MAPKK kinases (MAPKKK/MEKK). Downstream targets of MAPKs include a wide range of substrates including a number of transcription factors.

Phosphorylation of transcription factors leads to gene expression in response to the activating stimuli. In plants, MAPKs have been proposed to play a central role in cell cycle/division, hormone signaling, and transduction of physical and biological stress stimuli.[4-8] MAPK homologs have been isolated from various plant species. In *Arabidopsis thaliana*, 20 genes (MPKs) encode putative plant MAPKs, which can be grouped into four or five classes according to sequence similarity.[9] All plant MAPKs are classified into the PERK subfamily (plant extracellular-regulated kinase/ERK). In contrast, the family of stress-activated protein kinases (e.g. p38, JNK) found in other organisms is not present in plants. In *Arabidopsis thaliana* putative functions have been assigned to AtMPK3, AtMPK4, and AtMPK6, and all three MAPKs have been linked to diverse stress responses, including oxidative stress signaling, pathogen defense, drought, high salt, cold, and touch.[4-7, 10-13] Orthologs of AtMPK3 and AtMPK6 in tobacco, wound-inducible protein kinase (WIPK), and salicylate-inducible protein kinase (SIPK) respectively, are also activated by both biotic and abiotic stresses.[5, 9] Arabidopsis MAPKs, AtMPK3, AtMPK4, and AtMPK6 are rapidly and transiently activated by stress responses, by activation of distinct signal transduction pathways, involving upstream MAPKKKs (e.g. AtANP1and AtMEKK1) and MAPKKs including AtMKK1/2 and AtMKK4/5.[4, 7]

Reagent

The antibody is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody Concentration: approx. 1.5 mg/ml

Precautions and Disclaimer
Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile
By immunoblotting, a working antibody concentration of 1-2 µg/ml is recommended using an extract (cytosolic fraction) of *Arabidopsis thaliana* leaves.

By immunoblotting, a working antibody concentration of 2-4 µg/ml is recommended using an extract (cytosolic fraction) of *Nicotiana tabacum* leaves.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

1. Databases accession no.: (a) AtMPK3, TAIR At3g45640. (b) AtMPK6, TAIR At2g43790. (c) WIPK, NCBI T03971.
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