**Suppl. fig. 1** (A) PCR amplification of RPHY1, (B) colony PCR confirmation of positive recombination and (C) restriction digestion confirmation of purified recombinant plasmid using *BamHI* and *HindIII*

**Suppl. fig. 2** Multiple sequence alignment of RPHY1 protein with known HAPs protein family enzymes WP\_052173558.1, WP\_051611815.1, WP\_013063253.1, and AGH14071.1 by ClustalW v2.1. The residues forming putative ligand binding sites are highlighted.

**Suppl. fig. 3** (A) RPHY1 protein structure prediction and (B) ligand binding pocket of PO4

**Suppl. fig. 4** Determination of RPHY1 enzyme activity through well diffusion assay on agar plate. Clear zone of hydrolysis indicated retain of protein biological activity against (A) calcium phytate (B) sodium acetate buffer as negative control