

## عنوان مقاله:

Phenylalanine ammonia-lyase through evolution: A bioinformatic approach

## محل انتشار:

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## خلاصه مقاله:

Phenylalanine ammonia-lyase (PAL) is the first entry enzyme of the phenylpropanoid pathway that converts phenylalanine to cinnamic acid which is the precursor of various secondary metabolites. PAL is recently formulated for phenylketonuric patients in pegylated forms; therefore, screening a PAL with the highest affinity to the substrate is of a great importance. PAL exists in all higher plants and some fungi and few bacteria. Ancestors of land plants have been adopted by evolving metabolic pathways. A multi-gene family encodes PAL by gene duplication events in most plants. In this study, the taxonomic distribution and phylogeny of pal gene found in land plants, fungi and bacteria have been analyzed. It seems that the ancestor of plants acquired a pal gene via horizontal gene transfer in symbioses with bacteria and fungi. Gymnosperms have kept a diverse set of pal genes that arose from gene duplication events. In angiosperms, after the divergence of dicotyledons from monocots, pal genes were duplicated many times. The close paralogues of pal genes in some species indicate expansion of gene families after the divergence in plant pal gene evolution. Interestingly, some of the plant pals clustered by species in a way that pals within one species are more closely related to each other than to homologs in the other species which indicates this duplication event occurred more recently.

## کلمات کلیدی:

Phenylalanine ammonia lyase, Phylogenetic tree, Bioinformatic, Evolution, Phenylketonuria

## لینک ثابت مقاله در پایگاه سیویلیکا:

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