

**MOLECULAR AND FUNCTIONAL CHARACTERIZATION OF
AMORPHA-4,11-DIENE SYNTHASE GENE IN *ARTEMISIA ANNUA*
ANAMED A3**

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The genus *Artemisia*, belonging to the Asteraceae family, contains a large number of aromatic plants. *Artemisia annua* is used in traditional Chinese medicine since more than 2,000 years. Recently this plant has received increasing attention because it produces the endoperoxide sesquiterpene lactone artemisinin (AN), which is widely used for the malaria treatment. Its synthesis has been achieved, but it is uneconomical and gives low yields due to complex chemical structure. Thus AN extracted from plant currently is only source of commercial AN drug. The plant produce relatively small amounts of AN and this has led to intense research in order to increase the yield of AN in the plant or to develop alternative methods of AN production.

In this work, we have studied the genomic organisation and expression level of amorpha-4,11-diene synthase gene (ads) in different genotypes of *A. annua* characterized by high level of AN (Artemis developed by Mediplant, Switzerland and Anamed A3 developed by Action for Natural Medicine) and compared results with those obtained from wild type plants. Amorpha-4,11-diene synthase (ADS) is a key enzyme in AN biosynthesis which catalyzes the first committed step, in which farnesyl diphosphate (FPP) is converted to amorpha-4,11-diene. A molecular probe has been developed based on sequences available in gene bank. This probe has been used to study ads gene copy number and its expression levels during flowering when glandular trichomes accumulating the sesquiterpene are formed.