

Identification of a New *Aox1* Gene in *Annona muricata* L.

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Plant mitochondria possess a second transport electron pathway branching from the mitochondrial respiratory chain at ubiquinone level, mediated by alternative oxidase (Aox). Aox is encoded by a small family of three to five members in several plant species divided in two subfamilies, *Aox1* and *Aox2*. The *Aox1* is present in both monocot and eudicot plant species while *Aox2* is only expressed in eudicots. In previous work it was found only a single copy for *Aox1* and *Aox2* genes in *Annona muricata* L. The purpose of this work was to identify new Aox genes in *Annona muricata* L. Degenerated primer pair was designed to amplify Aox based in several cDNA sequences of monocot and dicot species. Genomic DNA isolated from leaves of 2-month-old plants and degenerated primers were used to amplify Aox genes by PCR. The PCR product (444 bp) was cloned in plasmid vector and several individual colonies were analyzed by restriction fragments polymorphism using *Alu* I enzyme. Seven clones were purified and sequenced. Three different Aox sequences were characterized which two of them were identical to *Aox1* and *Aox2* previously identified. The third Aox fragment presented 91 and 83% of identity with *Aox1* and *Aox2*, respectively. After phylogenetic analysis the previous *Aox1* was named *AmAox1a* while the new Aox gene was designed *AmAox1b*. These results show that Aox of *A. muricata* is encoded at least for 3 genes (*AmAox1a*, *AmAox1b* and *AmAox2*) suggesting an *Aox1* duplication event as observed in the majority of angiosperms.

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