Potential pathways of indole acetic acid (IAA) biosynthesis in *Euphorbia abyssinica*

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Desert candle (*Euphorbia abyssinica* J.F. Gmel.) (further referred to as EAG) is a succulent tree of dry deciduous and evergreen montane forest, woodland and shrub savanna. It occurs widely throughout dryland Africa, where it is appreciated as a live fence because it is easily propagated from untreated mature branch cuttings.

In Negussie *et al.* (2008) we argue that the ability of large EAG branches to regenerate with ease in dry soil may be related to the natural plant growth regulator hormone indole acetic acid (IAA) contained in the latex of the plant. EAG latex samples from northern Ethiopia (n = 3) that were chemically analyzed contained on average (± s.e. of mean) 350 ± 117 pmol IAA /g latex (350 pmol/g = 0.06 μg/g = 0.06 mg/l latex), as well as the IAA metabolites indole lactate (ILA: 477 ± 12 pmol/g latex) and indole ethanol (IEt: 316 ± 73 pmol/g latex). One sample also contained IAA conjugated to amino-acids (108 pmol/g latex) and glucose (371 pmol/g latex). Here we present a schematic overview of the potential pathways of IAA biosynthesis in EAG (Fig. 1).

The IAA metabolites found in the EAG latex, ILA and IEt, can be converted to indole-3-pyruvic acid (IPA) and indole acetaldehyde (IAAld) respectively. These molecules suggest that auxin biosynthesis in EAG is tryptophane (Trp) dependent. Woodward and Bartel (2005) found similar pathways in the model plant *Arabidopsis thaliana* Schur where *de novo* IAA biosynthesis initiates from Trp or Trp precursors.

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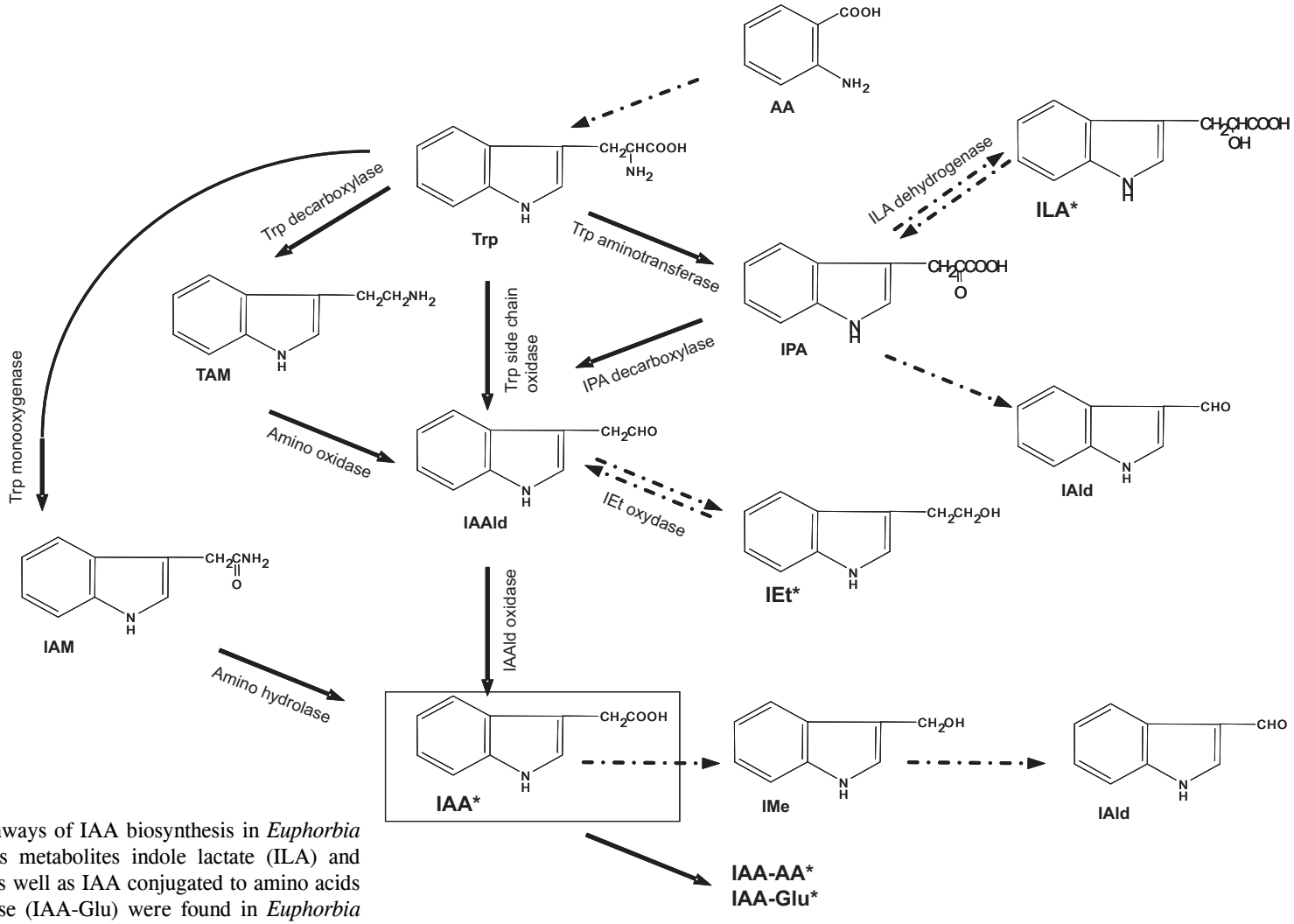

Fig. 1 Potential pathways of IAA biosynthesis in *Euphorbia abyssinica*. IAA, its metabolites indole lactate (ILA) and indole ethanol (IEt) as well as IAA conjugated to amino acids (IAA-AA) and glucose (IAA-Glu) were found in *Euphorbia abyssinica* latex from northern Ethiopia and are marked (*).

References

Negussie A, Aerts R, Prinsen E, Muys B (2008) *Euphorbia abyssinica* latex promotes rooting of *Boswellia* cuttings. New Forests, DOI: 10.1007/s11056-008-9106-7

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