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(54) Title: RECOMBINANT MANUFACTURE OF SANTALENE

(57) Abstract: The present invention concerns the field of recombinant manufacture of santalene and related products. In particular, it relates to a method for the manufacture of a composition comprising at least one santalene comprising the step of converting farnesyl pyrophosphate into at least one santalene, wherein said conversion is carried out by a polypeptide exhibiting santalene synthase activity. Moreover, the invention contemplates a composition comprising a mixture of beta-santalene and alpha-santalene with an excess of beta-santalene obtainable by the method of the invention. The invention also relates to the use of a santalene synthase polypeptide, a heterologous polynucleotide encoding it, a vector or gene construct comprising said polynucleotide, a host cell or a non-human transgenic organism comprising said gene construct or vector for the manufacture of a composition comprising at least one santalene, preferably, beta-santalene, more preferably a mixture of beta-santalene and alpha-santalene. Further, the present invention relates to a method for manufacturing a composition comprising at least one santalol, preferably beta-santalol, comprising producing a composition comprising at least one santalene by the aforementioned method of the invention and oxidising said at least one santalene, preferably, beta-santalene, into the respective alcohol in order to manufacture a composition comprising at least one santalol, preferably, beta-santalol. Yet, the invention pertains to a kit for the manufacture of a composition comprising at least one santalene comprising the aforementioned polypeptide, heterologous polynucleotide, vector or gene construct, host cell or non-human transgenic organism and to a non-human host cell or non-human transgenic organism expressing a polypeptide exhibiting santalene synthase activity from the aforementioned heterologous polynucleotide, vector or gene construct.

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