

# Chemo-Enzymatic Syntheses of Both Enantiomers of Neodictyoprolenol and Neodictyoprolene; Possible Biosynthetic Intermediates of Sex Pheromones in Brown Algae

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Neodictyoprolenol [(–)-(S)-(1,5Z,8Z)-undecatrien-3-ol], dictyoprolenol [(–)-(S)-(1,5Z)-undecadien-3-ol] and their acetates neodictyoprolene [(+)-(S)-3-acetoxy-(1,5Z,8Z)-undecatriene] and dictyoprolene [(+)-(S)-3-acetoxy-(1,5Z)-undecadiene], which are interesting as possible biosynthetic intermediates of the sex pheromones (dictyopterene **B**, **C'** and **D'**) of brown algae, were synthesized by chemo-enzymatic methods through optical resolution of racemic neodictyoprolenol and dictyoprolenol using two lipases; Amano PS (*Pseudomonas* sp.) and Novozym 435<sup>®</sup> (*Candida* sp.). A combination of acylation of the alcohols and hydrolysis of the acetates by Novozym 435<sup>®</sup> produced neodictyoprolenol, neodictyoprolene, dictyoprolenol and dictyoprolene with high optical purities over 99% enantiomeric excess (*e.e.*).

This synthetic methods will make it easier to search these compounds in marine algae and to study their biosynthesis.