

Transformations of peroxide Δ^3 -carene and (-)- α -pinene ozonolysis products by the action of tosyl hydrazide in isopropanol

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Abstract

Relevance of the available methods of preparation of *N*-functionalized compounds is due to their high biological activity and can be used both in medicine and in organic and analytical chemistry. The traditional method for preparing compounds with C=N bonds is the condensation of carbonyl compounds with hydrazine or hydroxylamine. For carbonyl compounds using various oxidizing methods, often with expensive and toxic reagents. Ozonolitic cleavage is an effective and ecological oxidation method and is widely used in industry and organic synthesis. Now in the world science investigated the use of ozone for the direct conversion of alkenes to *N*-containing compounds without isolating the intermediate carbonyl compounds. We have previously found that the semicarbazide, 2,4-dinitrophenylhydrazine, hydrochlorides of hydrazine, phenylhydrazine, semicarbazide and thiosemicarbazide, hydrazine sulphate are effective reducing agents of peroxide alkenes ozonolysis products to carbonyl compounds and their *N*- or *O*-functionalized derivatives. This article presents data on the transformations of ozonolysis peroxide products of available natural monoterpenes ((-)- α -pinene and Δ^3 -carene) in isopropanol under the action of tosyl hydrazide and the development of the method of converting of tri-substituted alkenes to ditosylhydrazones. It was found that to obtain ditosylhydrazones from the appropriate optically active monoterpenes it is necessary the processing of peroxide ozonolysis products with excess (3.5 equivalents) of tosyl hydrazide. Formation of ditosylhydrazones is due to the reduction of the first formed isopropoxyhydroperoxides to ketoaldehydes, condensation of carbonyl groups with tosyl hydrazide leads to a target tosylhydrazones. The result is one-pot ozonolitic method for preparing of ditosylhydrazones from natural monoterpenes, presupposing ozonolysis in isopropanol and subsequent treatment with tosyl hydrazide without requiring isolation of intermediates carbonyl compounds.