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Chromatographic enantioseparation of chiral sulfinamide derivatives on polysaccharide-based chiral stationary phases

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Highlights

- Enantioseparation of sulfinamides on polysaccharide chiral stationary phases is reported
- All of 12 sulfinamides can be resolved with three columns, eleven for both OD-H and AD-H
- A valuable guide for chiral HPLC study or technology related to chiral sulfinyl compounds

Abstract

Chiral sulfinamides are increasingly recognized for their extensive potential applications in chemistry, medicine and material science, yet chromatographic study on these compounds is seldom. In this article, we describe the enantioseparation of twelve closely related chiral sulfinamide derivatives on polysaccharide-based chiral stationary phases (CSPs). We investigated the factors affecting separation, such as the types of chiral columns, the concentration of polar alcohol and the column temperature. The acyclic sulfinamide derivatives—with the exception of a cyclic sulfinamide compound—were effectively resolved with a Chiralcel OD-H column and a mixture of n-hexane:isopropyl alcohol (90:10) as the mobile phase. All compounds except N-benzylidene-2-methylpropane-2-sulfinamide are baseline resolved on the Chiralpak AD-H column, but only eight compounds are resolved on a Chiralpak AS-H column under the given chromatographic conditions. This study offers valuable guidance for future chiral HPLC studies related to chiral sulfinamides.

Keywords: HPLC, chiral sulfinamides, enantioseparation, chiral stationary phases, polysaccharides

1. Introduction

Chiral sulfinamide derivatives have a major role in chemistry, medicine, agricultural chemistry and materials science [1-2]. Commercially available enantiopure tert-butanesulfinamide is widely used as a reasonably priced chiral ammonia equivalent in the production of many versatile building blocks, [1-