

Manufacturing an Eminent Mucolytic Medicine Using an Efficient Synthesis Path

Authors : Farzaneh Ziaee, Mohammad Ziaee

Abstract : N-acetyl-L-cysteine (NAC) is a well-known mucolytic agent, and recently its efficacy has been examined for the prevention and remediation of several diseases such as lung infections caused by Coronavirus. Also, it is administered as the main antidote in paracetamol overdose and is effective for the treatment of idiopathic pulmonary fibrosis (IPF), chronic obstructive pulmonary disease (COPD). This medicine is used as an antioxidant to prevent diabetic kidney disease (nephropathy). In this study, a method for the acylation of amino acids is employed to manufacture this drug in a high yield. Regarding this patented path, NAC can be made in a single batch step at ambient pressure and temperature. Moreover, this study offers a technique to make peptide bonds which is of interest for pharmaceutical and medicinal industries. The separation process was undertaken using appropriate solvents to achieve an excellent purification level. The synthesized drug was characterized via proton nuclear magnetic resonance (^1H NMR), high-performance liquid chromatography (HPLC), Fourier transform infrared spectroscopy (FT-IR), elemental analysis, and melting point.

Keywords : N-acetylcysteine, synthesis, mucolytic medication, lung anti-inflammatory, COVID-19, antioxidant, pharmaceutical supplement, characterization

Conference Title : ICPCPE 2021 : International Conference on Peptide Chemistry and Protein Engineering

Conference Location : Sydney, Australia

Conference Dates : December 02-03, 2021