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BOOK OF ABSTRACTS

REDUCTIVE AMINATION OF CARBOHYDRATE DERIVATIVES AS A SIMPLE ROUTE TO BUILDING BLOCKS FOR BIOLOGICALLY ACTIVE COMPOUNDS

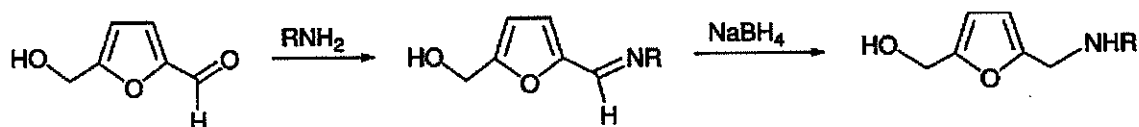
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5-(Hydroxymethyl)furfural (HMF) has recently attracted a significant amount of revived attention. It is produced from hexoses via acid-catalyzed dehydration and as a renewable building block used for the conversion to a wide range of useful derivatives. The most remarkable examples are 2,5-furandicarboxylic acid and 2,5-di(hydroxymethyl)furan, used in the production of polymers, and 2,5-dimethylfuran, a potential fuel additive with very promising features.

Another group of molecules that can easily be produced from HMF are 2-alkyl- and 2-arylaminomethylfurans. These structures are often found in various types of molecules with pharmacological activity, such as antihistaminics, glutamate modulators, glycine antagonists, muscarinic agonists, renin inhibitors, antifungal agents, kinase inhibitors, etc. In most of the patents covering production of these structures, furfural is used as a starting material. However, these procedures include long reaction times and rather drastic temperature and pressure conditions.



On the contrary, the here presented reactions of a two-step reductive amination of HMF were conducted in a very straightforward fashion: water and simple alcohols were used as reaction media, no catalyst was used and very mild conditions were employed. Starting from HMF and several aliphatic and aromatic amines, a small library of novel simple-structured derivatives was produced, in high yields and requiring only minimal purification. Conventional and microwave heating were successfully used as a means of enhancing reaction rates. This route therefore presents a novel way for the production of furan-based renewable building blocks.