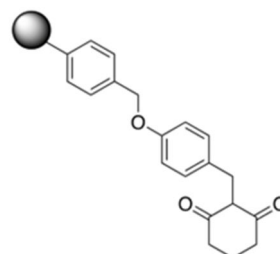


Heterogeneous buffer to prevent isomerization and decomposition

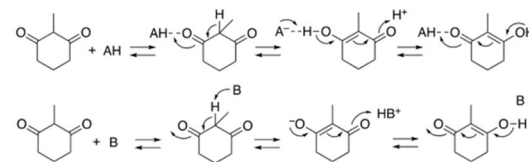
Summary

Maintaining product and reagent stability has long been an issue for the chemical and pharmaceutical industries. Contaminant-specific buffers are used both for upstream and downstream development and production processes, and lack of a suitable buffer can result in manufacturing delays or costly losses. Currently, there is no one-size-fits-all solution to neutralize both acid and base contaminants in organic solvents and provide effective buffering in non-aqueous solutions.

A team of researchers led by Prof. Fujie Tanaka has developed a series of resin-conjugated cyclic-1,3-diones that help stabilize chemical compounds in organic solution, preventing impurity-led isomerization and decomposition. The resin-supported formulation allows easy removal of the buffer by filtration. This is a versatile and inexpensive tool to prevent waste and extend shelf life in chemical synthesis and storage.



The resin-supported formulation can be easily removed by filtration



Proposed interactions of 2-methylcyclohexane-1,3-dione with acids (AH) and bases (BH)

Technology

This technology offers a simple solution to some of the production and storage challenges encountered in the chemical and pharmaceutical industries, where trace contaminants often cause racemization or decomposition of reaction intermediates or the desired product. Addition of these stabilizing compounds to the reaction or storage medium of molecules of interest represents a simple alternative to costly purification and storage measures. The rapid dynamics of the tautomerization equilibrium of cyclic-1,3-dione derivatives enable them to neutralize both acidic and basic contaminants and thus act as an effective buffer in non-aqueous systems. The buffer can be readily formulated into a resin-supported heterogeneous system.

Applications

- Synthetic chemistry
- Storage of chemicals and pharmaceutical products

Advantages

- Versatile, single solution for acid and bases
- Works in non-aqueous systems
- Easily removed by filtration
- Inexpensive

Category

Chemistry & Materials Science

Lead Researcher

Prof. Fujie Tanaka

Intellectual Property

Patent

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