THE UNIVERSITY of TEXAS
HEALTH SCIENCE CENTER AT HOUSTON
Office of Technology Management

Invariant Ampholyte Technology

Introduction: Carrier ampholytes are the key chemicals used in isoelectric focusing (IEF). The ampholytes set up a pH gradient when an electrical current is passed through them. If protein mixtures are added, the individual proteins move under the influence of the pH gradient to their individual isoelectric points. IEF is used as the first step in 2-dimensional electrophoresis, a key first step in modern proteomics technologies. In addition, IEF can be done in a capillary electrophoresis format. Further, ampholytes are necessary ingredients of a technique called immobilized pH gradient electrophoresis.

Current Problems: Historically, a major problem with commercial ampholytes is that the composition of ampholyte mixtures varies from manufacturer to manufacturer and it also varies from lot-to-lot from the same manufacturer. This variation is well documented and is widely known among practitioners of IEF techniques. Given the recent advancements in computer-aided image analysis for gel images, reproducibility becomes even more important than in the past.
Many approaches have been proposed to solve this variation such as mixing different lots to minimize the variation. This only compounds the problem by creating mixtures that can never be accurately reproduced. Recent data collected by scientists at Huntsman Ethyleneamines, Ltd. in collaboration with a University of Texas Health Science Center at Houston scientist has documented that the reason for the variation is due to variations in composition of the starting polyamine chemicals used for synthesizing the ampholytes. These variations are an inherent result of the method for synthesizing the ethyleneamine chemicals.

Technology: A chemical breakthrough by a scientist at the University of Texas Health Science center at Houston resulted in >95% pure carrier ampholytes that will not vary from lot-to-lot. This promises to be a powerful reagent, assuring the end user that results obtained today will be reproducible in the future. The chemistry eliminates all isomeric polyamines except pure linear forms, thus producing accurate and reproducible reactions. The manufacturers of ampholytes utilizing the Vesterberg approach to ampholyte synthesis can easily adopt this technology with a minimal change in their current synthesis protocols and have a competitive and superior product.

NON-CONFIDENTIAL TECHNOLOGY DESCRIPTION

The preceding is intended to be a non-confidential summary of a novel technology created at the University of Texas Health Science center at Houston (UTHSCH), for which the University has obtained patent protection.

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