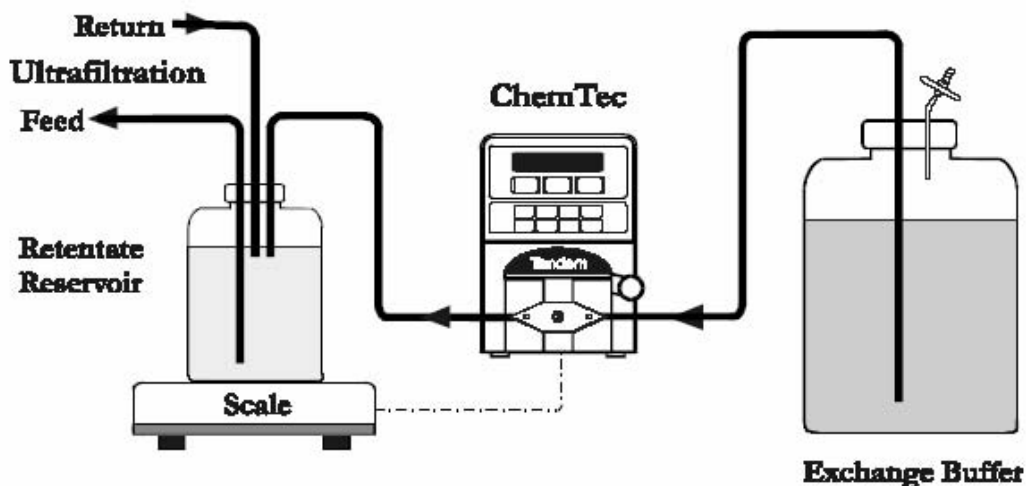


Automated Diafiltration (Washing) of Protein Solutions: BioProcessing System Maintains Safe TFF Conditions

SUMMARY:

The SciPro® and ChemTec™ automate constant volume diafiltration, i.e. removal of undesirable electrolyte (dissolved salts) from dilute protein solutions. In this procedure, the process solution containing the protein is re-circulated through a tangential flow filtration (TFF) device. The undesirable electrolyte is collected as permeate while the protein is left behind as retentate.

The exchange buffer is added to the retentate reservoir at the same rate at which the undesirable electrolyte is removed from the retentate. Typically, five (5) wash volumes of exchange buffer are used to remove 99% of the undesirable electrolyte. For example, 10 liters of protein solution containing the undesirable electrolyte, require 50 liters (5 wash volumes) of exchange buffer while collecting (as permeate) 50 liters of, increasingly diluted, electrolyte.



FEATURES:

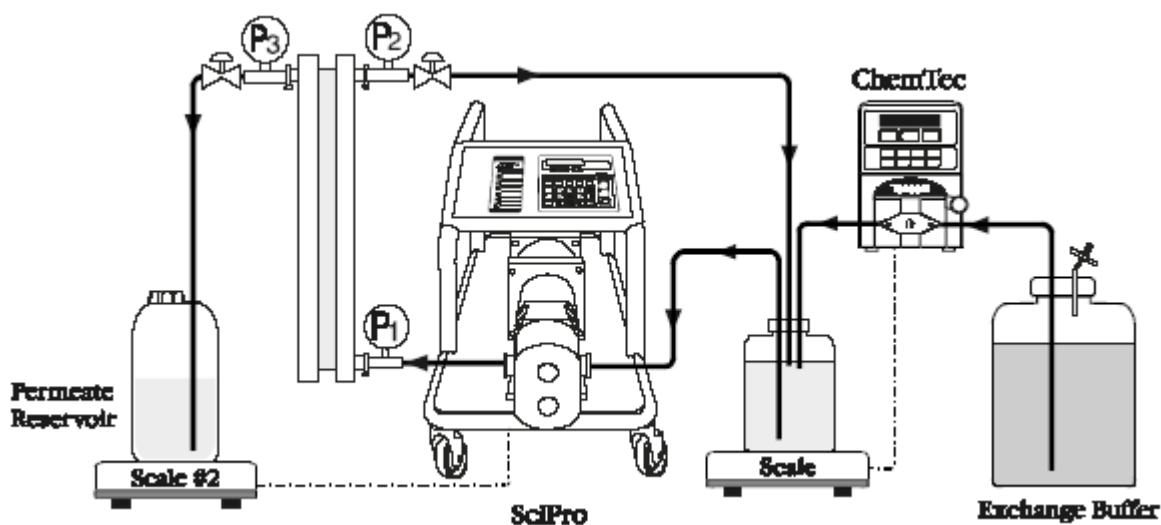
For automated diafiltration, the ChemTec is connected to an electronic scale on which the retentate (process) reservoir is located. The ChemTec is programmed to maintain a constant retentate volume/weight. While the SciPro re-circulates the retentate through an appropriate TFF device, undesirable electrolyte is collected as permeate.

During TFF, the retentate weight loss is equal to the amount of permeate collected. The ChemTec automatically adds an equal amount of exchange buffer to the retentate reservoir to make up for the weight loss. Typically, the diafiltration process is completed when 5x to 10x of the initial process volume has been exchanged.

OVER

ADDITIONAL FEATURES:

An automated diafiltration system is shown below. An optional second scale (scale #2) allows quantitative permeate collection. The SciPro has two filtration modes: diafiltration can be carried out by constant pump rate or by constant (TMP) pressure. The SciPro is a self-supervisory bio-processing system that offers five (5) user-definable alarms: A High Pressure Alarm to monitor filter plug-up conditions, a Low Pressure Alarm to monitor tube leaks / breaks, a Cumulative Volume Alarm to monitor the retentate re-circulation volume. A Permeate Weight Alarm to quantitatively measure the permeate yield / collection, and a Run Time Alarm that stops the pump when a user-defined filtration time has elapsed. All alarm parameters, including the TMP and pressures P1, P2 and P3 are continuously displayed for easy monitoring. All pump parameters, pressures and alarms can be printed out or sent to your computer for data archiving, and with SciLog's SciDoc Documentation Package, automatically placed in a custom Excel® Spreadsheet.



For tangential flow filtration as well as dead-end filtration, a number of different SciPro pump head options are available, including peristaltic, rotary lobe and magnetic gear, with output capacities ranging from 0.03 gal/m to 12 gal/m. The optically encoded, servo-controlled SciPro pump motor provides excellent pumping precision and accuracy.

ORDERING INFORMATION SciLog Customer Service: 1-800-955-1993

Catalog #	Description:
100-1382MASS	ChemTec CP-200 Smart Metering Pump: comes with a 600-RPM motor and a 1082 TANDEM peristaltic pump head; accommodates thick-walled (0.090" wall thickness) Masterflex pump tube sizes: #15 (59 to 995 ml/min), #24 (85 to 1350 ml/min), #35 (110 to 2250 ml/min).
100-SPE060	Mettler-Toledo "SpeedWeigh" Top-loading Scale, max 60 kg capacity, 6 gram resolution, Platform 12"x12", SS washdown construction. Includes Display Module and a SciLog RS-232 cable for hook-up with SciPro. Tested with SciPro prior to shipment. Contact SciLog for higher capacity scales.
800-104	SciPro 104 with a Watson-Marlow 624RE4 peristaltic pump head, 0.5 HP motor. 250 RPM max. 7:1 Speed Reducer. Uses StaPure Teflon tubing sizes: 17mm (0.54 to 14.6 l/min) and 12mm (0.34 to 8.14 l/min). The SciPro with the 624RE4 pump head generates a constant pump output over a pressure range from 0-60 psi. Both tube sizes come with fractional flange (3/4" Tri-clover) connectors made of Kynar. Pump rollers (4) can be disengaged for CIP/SIP
080-099CHEM	SciDoc for ChemTec , Documentation Software for ChemTec Data with customized Excel® Spreadsheet.