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MATERIALS MANAGEMENT DIVISION
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Technical Specifications :

FAST PROTEIN LIQUID CHROMATOGRAPHY SYSTEM

1. The system should be inert biocompatible for all purification and development work from microgram to gram scale. System should be capable of performing all the chromatography techniques: Size exclusion, Affinity, Ion exchange, Hydrophobic interaction and Reverse phase.
2. The system should deliver flow rate of 0.001 mL/min to 10 mL/min or higher with a flow rate accuracy of $\pm 2\%$ or better, and pressure limit of 20 MPa or higher. The system should have the capability of going to a higher flow rate for packing columns at the same pressure rating (atleast 20 L/min or more)
3. System pump should be binary, of piston make, must be capable of delivering solutions/mixtures with viscosity between 0.5 to 10.0 cP or better
4. The system should have a pressure sensor and alarm
5. The system should be fully modular system that can be further expanded to increase system capability and productivity
6. System should come with proper mixer module with magnetic stirrer to generate gradient.
7. The system must be equipped with a conductivity monitor capable of reading in the range 0.01-999 mS/cm or better
8. System should have the capability of running with automatic pressure-flow modulation option.
9. System should come along with a 2 mm flow cell and have the provision of normalizing the absorbance of 5 mm flow cell
OR
should come with a 5 mm flow cell
10. The UV-monitor should be capable of detecting a wavelength of 280nm using LED technology (operating time of 5000 hours or better)
11. The UV module of the system must be able to read absorbance range from 0 to +2000 mAU or better
12. To save the operational life of the UV, the system must have option to switch off the UV, when desired.

13. A flow restrictor should be present in the flow path to generate a back pressure that pre-vents the formation of air bubbles in the UV flow cell.

14. System should be supplied with an atleast one outlet port or more which can preferably be upgraded to higher number of ports in the future, if needed. The waste collection should be automatic, either through the outlet valve directly attached to the system (if multiple ports are present) or through the fraction collector (if one outlet port is present)

15. Automated Sample Injection: System must be capable of automated sample injection. System should have option of loop selection for application of variable sample volumes.

16. SOFTWARE:

- The system must be provided with software that works on a single software platform with full networking capabilities and has capability to be controlled through an independent desktop or laptop computer.
- The software must have both user programmable and pre-defined application protocols and method templates. External design of experiment package should be available
- The software must have a detailed evaluation segment for peak integration and evaluation, peak smoothening, peak offset adjustment, peak differentiation, peak addition and subtraction, peak overlay comparison of results and automated quantification of peak fractions.
- The software should come with inbuilt library with information of own and 3rd party pre packed column for easy selection
- Sharing of methods and results along with remote access capabilities should be possible
- Method Queues for combining different purification techniques.
- Automatic data recovery after run is over should be possible.
- The software should keep both the pre analysis and post analysis data files for future references automatically.

17. The system should be supplied with a fraction collector with

- Adequate protection from spillage using drop sync
- Ability to accommodate tubes of 15 and 50 ml tubes as well as smaller volumes
- Fraction collector should be capable of being used in time, volume or peak recognition mode

18. The system should have upgradable modular capability to be integrated using I/O box with third party Detectors and Auto samplers.

19. The system should be flexible to be upgraded to multiwavelength detector with capacity to monitor 2 or more wavelengths simultaneously between 190-700 nm wavelength range or better

20. Accessories: Necessary kit box having all accessories, cables and several types of tubing and connectors useful for liquid chromatography applications (for columns of affinity chromatography,

buffer exchange, ion exchange, gel filtration, and HIC), tubing cutter, wrench, column clamps etc. should be provided. All the accessories including PEEK Tubing, ferules and unions/connectors required to run the above should be supplied. Sample loops of 500ul (2 nos.), 1ml (2 numbers), 2ml (2 nos.) should be included

Other conditions:

- Warranty: 1-year comprehensive warranty (including damaged part replacement of all accessories and the main unit and service engineer visit)
- Installation: The system should be installed by trained engineer and at least 2 users must be trained on site on operation and maintenance
- System should be ISO/CE certified and should include all accessories required to function. System should not be refurbished.
- Power cables/outlet should be compatible with Indian electrical requirements.