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TENDER DOCUMENT FOR

SUPPLY OF LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY (Q-TOF-LC-MS/MS)

Arya Vaidya Sala Kottakkal (AVS) invites sealed tender from manufactures (or their 'authorized' dealers that they have been authorized to quote in response to this) of the following items

Sl. No.	Tender Ref. No.	Subject	Earnest Money Deposit (EMD)
1.	AVS/CMPR-2022/COE-LC-MS/MS01	<p>Supply of Liquid Chromatography- Mass Spectrometry (Q-TOF-LC-MS/MS) in Centre for Medicinal Plants Research, AVS, Kottakkal.</p> <p>Qty. : 01</p> <p>TECHNICAL BID</p> <ol style="list-style-type: none">1. Scanned Copy of Proof of Tender Fees and EMD2. Technical Specification of Liquid Chromatography- Mass Spectrometry (Q-TOF-LC-MS/MS) as per Annexure-I.3. Technical Compliance Statement as per Annexure-II4. Copy of Tender Acceptance Letter as per Annexure-A. <p>PRICE BID</p> <ol style="list-style-type: none">1. Price Bid for Supply of Liquid Chromatography- Mass Spectrometry (LC-MS/MS)2. Complete Financial Bid with all terms and conditions for Supply of Liquid Chromatography- Mass Spectrometry (LC-MS/MS).	₹ 3,50,000/-

TENDER DOCUMENT FOR: O-TOF-LC-MS/MS
CRITICAL DATE SHEET

Published Date	10-06-2022
Bid Document sending Start Date	13-06-2022 (04:00 PM)
Clarification Start Date	13-06-2022 (04:00 PM)
Clarification End Date	20-06-2022 (05:00 PM)
Bid Submission Start Date	13-06-2022 (04:00 PM)
Bid Document sending End Date	25-06-2022 (05:00 PM)
Bid Submission End Date	30-06-2022 (05:00 PM)
Bid Opening Date	04-07-2022 (03:00 PM)
Address For Communication	Dr. P R Ramesh Principal Investigator & Chief (Clinical Research) Charitable Hospital, Arya Vaidya Sala, Kottakkal-676503, Malappuram, Kerala .

The Tender Documents for the given items will be on Two Bid System consisting of Technical Bid and Price Bid. Both Technical Bid and Price Bid should be submitted by registered post. **Physical submission will not be accepted.**

The Tender Document along with detailed specifications, terms and conditions may be obtained by mail after receiving the receipt of Tender processing fee to coeayushavs@gmail.com

The Tender Processing Fee of ₹ 5000/-(Non-Refundable) and E.M.D. of ₹ 3,50,000/-(Refundable) for this Tender to be paid in the form of Bank Draft in favour of Arya Vaidya Sala payable at Kottakkal before the Bid Opening Date and time. The hard copy of DD for Tender processing fee and EMD should be reached on or before the Bid Opening Date and Time at the address: Dr. P R Ramesh, Principal Investigator & Chief (Clinical Research), Charitable Hospital, Arya Vaidya Sala, Kottakkal-676503, Malappuram, Kerala

The Tender should be addressed to **Dr. P R Ramesh, Principal Investigator & Chief (Clinical Research), Charitable Hospital, Arya Vaidya Sala, Kottakkal-676503, Malappuram, Kerala** and should be submitted on or before the date and time of Bid opening date and time as mentioned in critical date sheet.

The Institute shall not be responsible for any delay in submitting Bids. The Institute reserves the right to accept or reject any bid, cancel the Tender without assigning any reason thereof. No correspondence in this regard will be entertained.

(Dr. P R Ramesh)
Principal Investigator

Liquid Chromatography-Mass Spectrometry (LC-MS/MS)

Technical Requirement

1	<p>Ion Source:</p> <ul style="list-style-type: none"> • ESI & APCI sources
2	<p>Interface:</p> <ul style="list-style-type: none"> • The interface between LC and Mass Spectrometer should be capable of handling large batches of samples with complex matrices over a long period of time. • The maintenance and cleaning of interface must be simple
3	<p>Mass Analyzer:</p> <ul style="list-style-type: none"> • Analyzer should be Quadrupole followed by High Resolution Mass Analyzer separated by a Collision Cell. • Mass range should be from m/z 100 to 10000 or better • Mass resolving power: Greater than 10,000 at 118 m/z; Greater than 20,000 FWHM at 1,522 m/z • Mass accuracy: upto 2 ppm for ms and 3 ppm to ms/ms or better • Spectral acquisition rate : 50 spectra/second or better • Positive to negative switching: 1.5 seconds or better • Mass accuracy temperature stability: 15 to 35° C or better • Mass resolution: highest as per standard performance test • Mass Acquisition must be capable to do all analysis including MS, MSMS together in single analysis • In spectrum dynamic range on coeluting components while maintaining maximum mass resolution must be 5 orders or better. • Calibration and Tuning: Automated delivery of calibrant for tuning and mass calibration without requirement of any external syringe pump etc. The tuning process should be automated, and software controlled.
4	<p>Software:</p> <ul style="list-style-type: none"> • Single software should control both LC & MS and should be capable to generate chemical formula and structure of unknown compounds. All required software for unknown structure identification of Phytochemicals, Herbals and Metabolites should be quoted. • The Software should be capable to generate chemical formula and structure of unknown compounds. Screening, Component Identification & Structural Elucidation workflows. Structure interpretation tool is mandatory. The software should also have capability for assigning structures by taking fragment ion spectra into account and automatically calculating fragments based on algorithms. • The software should have capability to do feature extraction and predict the probability of each proposed chemical formula. • The software have the following features • Unique co-elution score of diagnostic fragment ion used to verify hits • Ability to expand user's own library of compounds • Rapid curation of quantitative methods which automatically selects two high quality Daughter ions for each compound. There should be a Multiple Analyte Quantitation feature as standard. • Auto-tuning - The system should be capable of automated tuning of parameters across the system. Flexible automated optimization for small/labile/Fragile molecule analysis should be present so that system can be utilized for screening of very small to large metabolites and contaminant residues without having to compromise in resolution or sensitivity. • Data base: Appropriate data base including common metabolites, natural products, phytochemicals, organic small molecules etc. • Data processing software: Suitable statistical software for data evaluation, pathway analysis , PCA Plots should be quoted

<ul style="list-style-type: none"> • 	<p><u>Specification for HPLC:</u> HPLC: High Pressure Quaternary Gradient with Auto sampler and Column Ovens should be offered as Front-end to the Mass Spectrometer/ Ultra Performance Liquid Chromatography. The System should handle both HPLC and sub 2 micron particle size columns</p>
<p>6</p>	<p>Quaternary Gradient pump with online degassing unit:</p> <ul style="list-style-type: none"> • Quaternary Gradient pump with capability to handle back pressure of 11500 Psi or better. • Number of solvents delivery - 4 solvents or more. • Pressure tolerance: 11500 Psi or better. • Flow rate: 0.001 to 5 ml/min or better
	<ul style="list-style-type: none"> • Flow rate accuracy $\pm 1\%$ or ± 10 ul/min of set value whichever is larger. • Flow rate precision $\pm 0.07\%$ RSD or better • Composition precision should be below 0.2% RSD (or) accuracy below 0.5% • Composition setting range from 0 to 100% with 0.1% increment • Degassing unit should have 4 flow lines • Delay Volume - ≤ 350 μL • Leak sensors should be available
<p>7</p>	<p>Auto-Sample Injector</p> <ul style="list-style-type: none"> • Injection Method: Total sample injection design with variable injection volume • Sample injection volume: 0.1 μl to 100 μl • Carry over: 0.004% • Injection Cycle time: 20 sec or better. • Injection volume precision: $< 0.3\%$ RSD or better • Sample handling capacity: More than 120 nos. of 1.5ml/2ml sample vial. • Safety features like leak sensor and automatic rack and vial recognition • 100 Nos. of 1.5/2ml sample vial with cap and septa should be offered.
<p>8</p>	<p>Column Oven:</p> <ul style="list-style-type: none"> • Temperature setting range should be 10°C Below Ambient (Minimum 4°C) to 40°C or better. • Temperature setting in steps of 1°C. • Column oven compartment should be able to accommodate at least 4 columns of 5 cm or 2 columns of 30cm or better
<p>9</p>	<p>Column switching Valve:</p> <ul style="list-style-type: none"> • Software controlled 4 column switching/selection valve should be offered.
<p>10</p>	<p><u>HPLC Detector:</u> DAD detector:</p> <ul style="list-style-type: none"> • Light source: Deuterium (D2) lamp, tungsten (W) lamp. • Number of diode elements: 1024. • Wavelength range: 190 to 950 nm. • Slit width: Programable from 1 – 16nm or better. • Wavelength accuracy: ± 1 nm max. • Noise: $< \pm 0.7 \cdot 10^{-5}$ AU (under specified conditions) • Drift: $< 0.9 \cdot 10^{-3}$ AU/h (under specified conditions) • Data rate: 120 Hz or better. • Flow cell having path length of 10 mm & volume of 13 ul -15 ul should be provided.

11	<p>ELSD Detector: (To be quoted as Optional)</p> <ul style="list-style-type: none"> • Light source: LED • Eluent flow Range: 200µL/ min to 2 mL/min • Data Rate: 60 Hz or better • Detector: PMT • Operating Pressure: 70 Psi to 100 or better.
12	<p>Columns:</p> <ul style="list-style-type: none"> • C18: Qty:2; • C8 : Qty:1; • Normal Phase column: Qty:2 <p>Additional columns suitable for carbohydrates, amino acids, peptides, pharmaceutical excipients should be quoted. Column length for each column should be 150 mm and particle size of column packing should be 5 micron or better.</p>
13	<p>Accessories:</p> <ul style="list-style-type: none"> • Imported Nitrogen Gas generator with built-in compressor suitable for the above LCMS should be offered. • Collision gas provider (Ar/N2) should be offered • Suitable branded computer with printer cum scanner for the LC-MS System should be offered
14	<p>10 KVA UPS with batteries, minimum 2 hour back up</p>
15	<p>Warranty:</p> <ul style="list-style-type: none"> • Five years from the date of installation should be offered for complete HPLC, MS, Nitrogen generator & UPS and warranty should be quoted with proper factory part numbers. • NOTE: All the components of HPLC & MS Should be from same manufacturer.