CLINICAL APPLICATION OF HA+HD

Blood Purif.Published online August 11,2022.doi:10.1159/000525225

Randomized Control Study on Hemoperfusion Combined with Hemodialysis versus Standard Hemodialysis: Effects on Middle-Molecular-Weight Toxins and Uremic Pruritus[4]

438 MHD patients from 37 HD centers

"The long-term HP(HA)+HD can reduce β2M and PTH levels and improve pruritus in MHD patients independently on the use of high-or low-flux dialyzers, showing that the results are linked to the effect of adsorption."

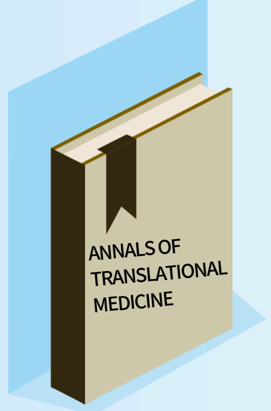
All results are based on specific patients, actual outcomes may vary individually.

Blood Purif (2022)51(3):199-212.https://doi.org/10.1159/000514940

Survival Outcomes of Hemoperfusion and Hemodialysis versus Hemodialysis in Patients with End-Stage Renal Disease: A Systematic Review and Meta-Analysis[5]

"HP(HA)+HD can achieve the complementary elimination of metabolites, preventing and treating complications caused by long-term dialysis. "

All results are based on specific patients, actual outcomes may vary individually.



2021 Jul;9(14):1133.doi:10.21037/atm-21-1100.

Cost-effectiveness analysis of hemodialysis plus hemoperfusion versus hemodialysis alone in adult patients with end-stage renal disease in China[6]

"Our analyses indicate a potential for HD+HP(HA) to be cost-effective for adult patients with ESRD in China. Compared to HD alone, HD+HP reduces incidence of severe CVD events."

All results are based on specific patients, actual outcomes may vary individually.

Toxins Removal

Complication Management

Clinical Evidence

PRODUCT SPECIFICATIONS

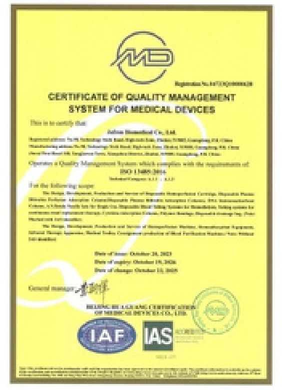
Adsorbent Volume (mL)	130
Biocompatibility	Tested as required in ISO10993
Adsorbent Material	Double Cross-linked Styrene-divinylbenzene Copolymers
Housing Material	Polycarbonate
Sterilization Method	Irradiation Sterilization

Precaution: Physicians should pay attention to potential side effects such as low blood pressure, chill and coagulation when using the product.
*Contraindications, Warnings and Precautions: refer to Instructions for Use.

Jafron: Global Manufacturer and Supplier of Adsorption Columns

CE-MDR

ISO 9001



EN ISO 13485

References
[1] Cozzolino M, Magagnoli L, Ciceri P. Toxins (Basel). 2025 Jun 10;17(6):295
[2] Ronco,Claudio.Integrative Medicine in Nephrology andAndrology 11(1):e00006, March 2024.
[3] Expertconsensus on theclinical application of hemoperfusion in maintenance hemodialysis patients(2025 Edition)[J].SMJ,2025,48(9):529-542.
[4] Zhao D, et al. Blood Purif. 2022 Aug 11:1-11. doi: 10.1159/000525225. Epub ahead of print. PMID: 35952629.
[5] Cheng W, Luo Y, Wang H, Qin X, Liu X, Fu Y, Ronco C. Blood Purif. 2022;51(3):213-225. doi: 10.1159/000514187. Epub 2021 May 10. PMID: 33971651; PMCID: PMC8985078.
[6] Wang H, Jin H, Cheng W, Qin X, Luo Y, Liu X, Fu Y, Jiang G, Lu W, Jin C, Pennington M. Ann Transl Med. 2021 Jul;9(14):1133. doi: 10.21037/atm-21-1100. PMID: 34430574; PMCID: PMC8350641.

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Jafron

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Stock Abbreviation: JFSW
Stock Code: 300529

HEMOADSORPTION TECHNOLOGY

HA130

Order code Husk Medical B.V.: HM-675100

**20+ YEARS IN BLOOD PURIFICATION CLINICAL PRACTICES
USED IN MORE THAN 90 COUNTRIES AND DISTRICTS**

HEMOADSORPTION TECHNOLOGY

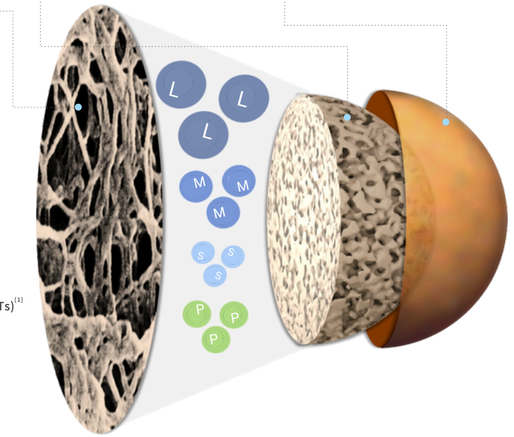
○ HA130 adsorbs uremic toxins accumulated in ESRD[1]

Jafron Resin Technology

Pore size adjustment
Extensive sieving of endogenous and exogenous molecules

Hyper double cross-linked
High mechanical strength with surface area over 1000㎡/g

Nanobiomaterial coating
Good biocompatibility, preventing particle detachment into human body



- Large-middle molecule toxins[1]
- Medium-middle molecule toxins[1]
  TNF-α、IL-6、IL-1β
- Small-middle molecule toxins[1]
  iPTH、IL-8、β2-MG
- Protein-bound uremic toxins (PBUTs)[1]
  IS、PCS、Hcy

○ Adsorption Mechanism

3D mesh molecular sieve

The resin can sieve uremic toxins, optimize removal of uremic middle molecular toxins and protein bound toxins in the blood[1]

Lipophilic and hydrophobic effects

The resin surface contains abundant non-polar structures (such as benzene rings), which interact hydrophobically, with the nonpolar regions of toxins.

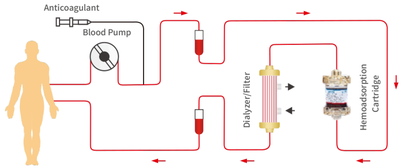
Van der Waals force

Toxins are adsorbed onto an over-1000 m^2/g surface in the porous micro-environment of the Jafron HA130 resin.

HA+HD: COMBINED ARTIFICIAL KIDNEY

○ HA+HD Therapy Operation Mode

HA130 cartridge is compatible with many extracorporeal blood circuits including Hemodialysis (HD), Hemofiltration (HF) & Hemodiafiltration(HDF). Indicating accumulated toxins in end stage renal disease hemodialysis related complications.

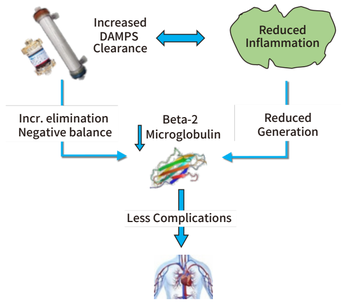


Comparison between different dialysis modalities[1]

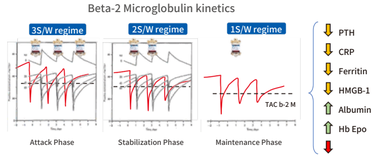
	Exogenous Molecules		Endogenous Water-Soluble Molecules			
Molecular Weight	Gut-Derived Protein-Bound Molecules<80%	Gut-Derived, Protein-Bound Molecules>80%	Small Molecules (<0.5 kDa)	Small-Middle Molecules (0.5-15 kDa)	Medium-Middle Molecules (15-25 kDa)	Large-Middle Molecules (25-58 kDa)
Uremic toxins	ADMA, SDMA, uric acid, carbamylated compounds, urea, TMAO	Hcy, IS, pCS, CML, kynurenines	Urea	β2-microglobulin, IL-8	TNF, IL-18, IL-10, IL-6, kappa-FLC, myoglobin, sTNFR2, FGF-2, prolactin, complement factor D	AGEs, FGF-23, λ- F LC
Low-flux HD	YES	NO	YES	NO	NO	NO
High-flux HD	YES	NO	YES	YES	NO	NO
Online HDF/HDX	YES	YES	YES	YES	YES	NO
Hemoadsorption (HA)	YES	YES	——	YES	YES	YES

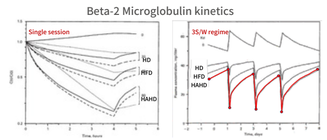
○ HA+HD: Inflammation Mitigation Hypothesis[2]

The enhanced clearance of toxins and mediators leads to an increased elimination of β2M.



3-Sessions-per-week regimen achieves a progressive reduction in pre-dialysis β2M values.





INDICATION OF HA+HD

○ Expert Consensus on The Clinical Application of Hemoperfusion in MHD Patients (2025 Edition) [3]

① Standard Treatment Regimen — 1 session per week

Complications	Appropriate Patients	Recommended frequency
Uremic Pruritis	Duo's pruritus score of the MHD patient ＞12 or the VAS score ≥7	Once weekly
Uremia-Related Sleep Disorders	Pittsburgh sleep quality index(PSQI)of the MHD patient ≥10	Once weekly / every 2 weeks
Restless Leg Syndrome(RLS)	RLS severity scale scores≥11	Once weekly
Microinflammatory Condition	High-sensitivity C-reactive protein (hs-CRP) ＞3mg /L,CRP ＞8 mg /L, IL-6 ≥16pg/mL, or TNF-a ≥41 pg/mL	Once weekly
CKD-Mineral and Bone Disorder(CKD-MBD)	For MHD patients with moderate to severe SHPT uncontrolled by drugs, showing iPTH > 600 pg/mL or significant vascular calcification (Agatston >100 or Kauppila >4.5)	Once weekly
High serum β2-MG	β2-microglobulin(β2-MG)＞30 mg/L or with dialysis related amyloidosis such as carpal tunnel syndrome	1–3x weekly
Protein-Energy Wasting (PEW)	The modified quantitative subjective global assessment(MQSGA)score ＞20 or the malnutrition inflammation score(MIS)＞18	Once weekly
Refractory Hypertension	Systolic blood pressure(SBP)＞160 mm Hg(1 mmHg=0.133kPa)	Once weekly / every 2 weeks
Uremic Peripheral Neuropathy	Limb numbness or paresthesia,weakened or absent muscle tension or tendon reflex or whose peripheral nerve electrophysiological examination shows more than 2 nerves	Once weekly
Protein-Bound Uremic Toxins(PBUTs) Accumulation	For MHD patients exhibiting accumulation of protein-bound uremic toxins (PBUTs), especially when indoxyl sulfate (IS) > 44 mg/L or p-cresyl sulfate (P CS) > 1 9 m g / L	Once weekly

② Intensive Treatment Regimen — 2–3 sessions per week

For Maintenance Hemodialysis (MHD) patients presenting with severe, refractory complications that are unresponsive to conventional HD/HDF/HDx, an individualized, short-term intensive regimen is recommended.