

Basic FAQ Related to Jafron Hemoperfusion

1. How do the structure of Jafron HA resins look like?

- The adsorbent materials of HA cartridges are neutro-macroporous resin made of double cross-linked styrene-divinylbenzene copolymers.
- The adsorption principles of the resins include the molecular sieve, van der Waals, and the hydrophobic characteristics of the resins.
- Jafron's porosity control technology adjusts the resin pore size distribution and adsorption range.
- Collodion coats the resins to mitigate the possible adverse effect of direct contact with blood.

2. What are the indications for HA cartridges?

According to clinical practices and studies, disposable hemoperfusion cartridge is indicated to remove the following substances^[1-11]:

- Inflammatory mediators and cytokines such as IL-1, IL-6, IL-8, IL-10, TNF- α .
- Overdosed drugs and poisons such as organophosphorus, paraquat, carbamazepine.
- Accumulated β 2-MG, PTH, leptin and protein-bound toxins in end stage renal disease hemodialysis-related complication.
- Excessive triglyceride and cholesterol in hyperlipidaemia severe acute pancreatitis.
- Other substances: bilirubin, myoglobin.

3. Could you illustrate the safety and biocompatibility of Jafron cartridges?

The biocompatibility of the cartridges has been evaluated both in vitro and in vivo. In vitro, CT imaging showed an excellent distribution of the flow inside the HA cartridges without channeling phenomena^[10]. The cytotoxicity test demonstrated that HA cartridges carried out an optimal level of biocompatibility, and their use was not associated with adverse reactions^[11]. Clinically, the publications did not show significant adverse reactions related to Jafron hemoperfusion^[1,2,8,12,13].

4. What is the platelet loss rate during hemoperfusion with Jafron?

According to the previous studies, Jafron hemoperfusion did not show a severe reduction in platelet levels^[14-15]; the loss of the platelets is low, usually is less than 10%, and usually recovered within 24 hours.

5. Do hemoglobin and albumin adsorbed by the cartridges?

The previous studies did not show significant decrease of hemoglobin and albumin after the hemoperfusion treatment^[16,17].

- [1] Huang, Zhao, et al. "Effect on extrapulmonary sepsis - induced acute lung injury by hemoperfusion with neutral microporous resin column." *Therapeutic Apheresis and Dialysis* 17.4 (2013): 454-461.
- [2] Sun, Shiren, et al. "High-volume hemofiltration plus hemoperfusion for hyperlipidemic severe acute pancreatitis: a controlled pilot study." *Annals of Saudi medicine* 35.5 (2015): 352-358.
- [3] Xu, Xuefeng, et al. "Effect of HA330 resin-directed hemoabsorption on a porcine acute respiratory distress syndrome model." *Annals of intensive care* 7.1 (2017): 1-17.
- [4] Li, Li, et al. "Hemoperfusion plus continuous veno-venous hemofiltration in the treatment of patients with multiple organ failure after wasp stings." *The International journal of artificial organs* 43.3 (2020): 143-149.
- [5] Li, An, et al. "Early stage blood purification for paraquat poisoning: a multicenter retrospective study." *Blood purification* 42.2 (2016): 93-99.
- [6] Jiang, Shu-zhi, et al. "Clinical efficacy of intravenous infusion of atropine with micropump in combination with hemoperfusion on organophosphorus poisoning." *Saudi journal of biological sciences* 26.8 (2019): 2018-2021.
- [7] Yang, Xiangming, et al. "Early hemoperfusion for emergency treatment of carbamazepine poisoning." *The American journal of emergency medicine* 36.6 (2018): 926-930.
- [8] Huu, Dung Nguyen, et al. "A Combination of Hemodialysis with Hemoperfusion Helped to Reduce the Cardiovascular-Related Mortality Rate after a 3-Year Follow-Up: A Pilot Study in Vietnam." *Blood purification* 50.1 (2021): 65-72.
- [9] Chen, Shun-Jie, et al. "Combination of maintenance hemodialysis with hemoperfusion: a safe and effective model of artificial kidney." *The International journal of artificial organs* 34.4 (2011): 339-347.
- [10] Lorenzin, A., et al., *Fluid Dynamics Analysis by CT Imaging Technique of New Sorbent Cartridges for Extracorporeal Therapies*. 2019. 48(1): p.18-24.
- [11] Montin, D.P., et al., *Biocompatibility and cytotoxic evaluation of new sorbent cartridges for blood hemoperfusion*. 2018. 46(3): p. 187-195.
- [12] Qing-hua, W., and W. Feng. "Effect of Coupled Plasma Filtration Adsorption on Inflammatory Mediators and Liver Function of Patients with Severe Acute Pancreatitis 2019; 2: 111." *Research Article*.
- [13] Kidney." *The International journal of artificial organs* 34.4 (2011): 339-347.
- [14] Yuan, Hai, et al. "Efficacy of two combinations of blood purification techniques for the treatment of multiple organ failure induced by wasp stings." *Blood purification* 42.1 (2016): 49-55.
- [15] Kaçar CK, Uzundere O, Kandemir D, Yekta A. Efficacy of HA330 Hemoperfusion Adsorbent in Patients Followed in the Intensive Care Unit for Septic Shock and Acute Kidney Injury and Treated with Continuous Venovenous Hemodiafiltration as Renal Replacement Therapy. *Blood Purif*. 2020;49(4):448-456. doi: 10.1159/000505565. Epub 2020 Jan 28. PMID: 31991412.
- [16] Yuan, Hai, et al. "Efficacy of two combinations of blood purification techniques for the treatment of multiple organ failure induced by wasp stings." *Blood Purification* 42.1 (2016): 49-55.
- [17] Chen, Shun-Jie, et al. "Combination of maintenance hemodialysis with hemoperfusion: a safe and effective model of artificial kidney." *The International journal of artificial organs* 34.4 (2011): 339-347.

Contraindications, warnings and precautions of the products, please refer to Instruction For Use.