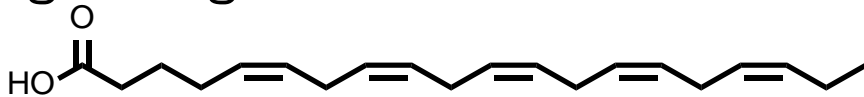


Omega-3

Omega-3 are polyunsaturated fatty acids.

Existing in fish oil extracted from Scombridae, Clupeidae, and Salmonidae families.

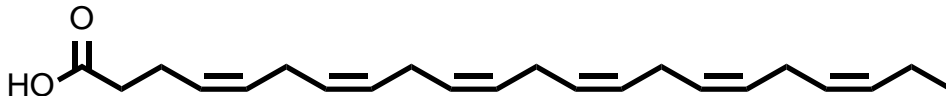
Omega-3 are essential nutrients in human diet and are linked to a growing number of health benefits.



EPA(eicosapentaenoic acid)

Chemical Formula: $C_{20}H_{30}O_2$

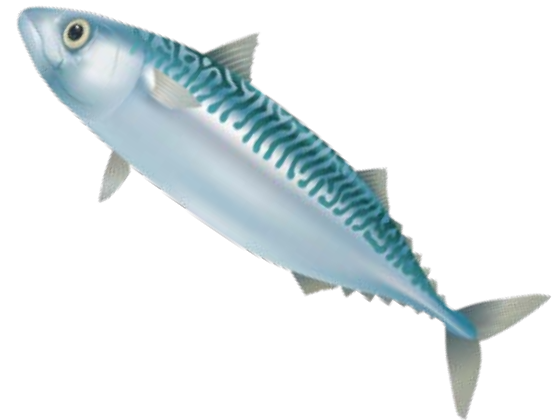
Molecular Weight: 302.46



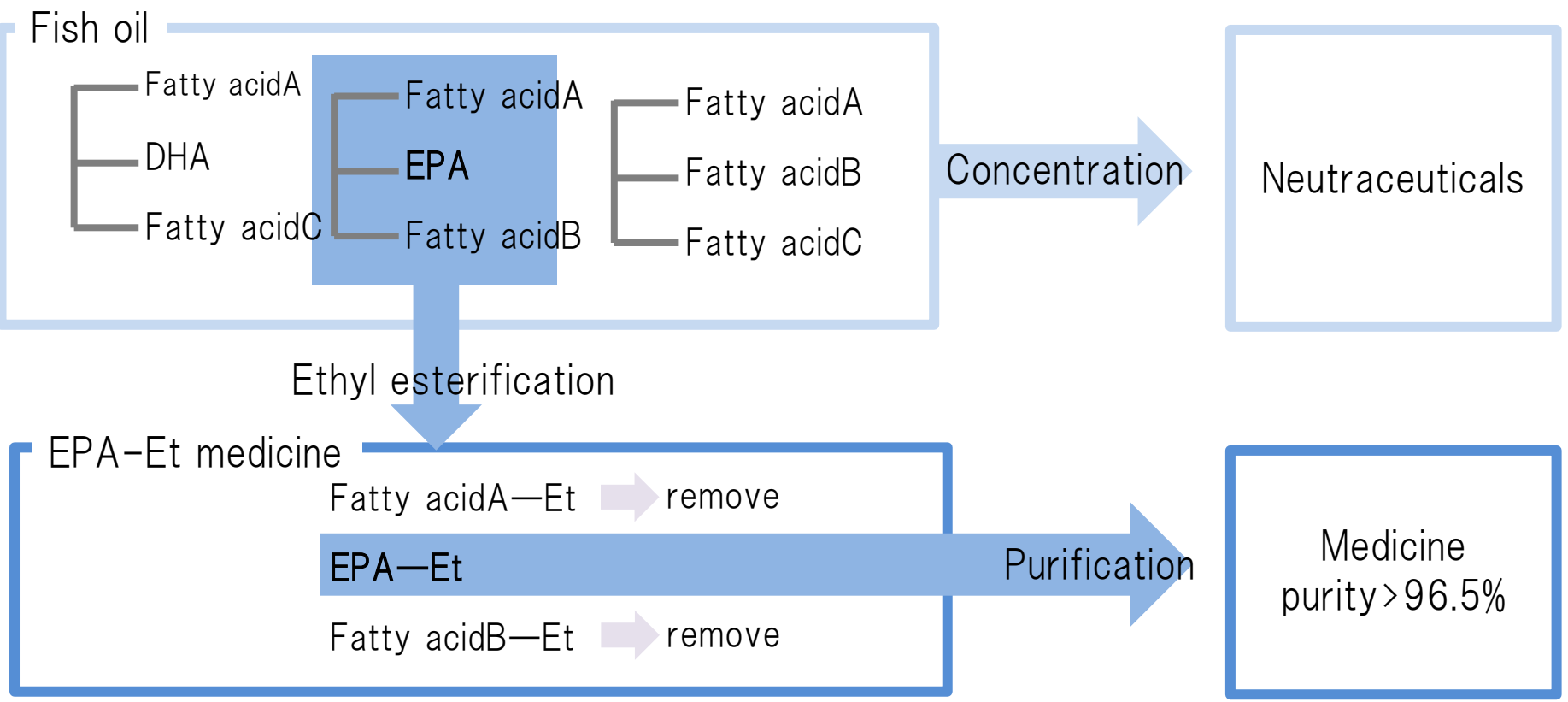
DHA(docosahexaenoic acid)

Chemical Formula: $C_{22}H_{32}O_2$

Molecular Weight: 328.50

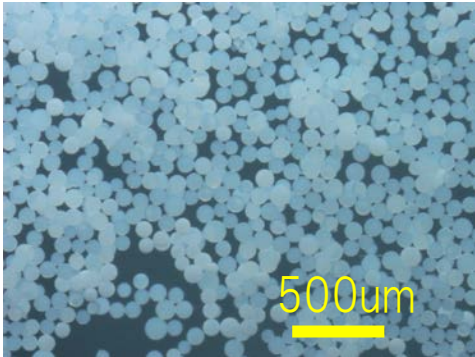
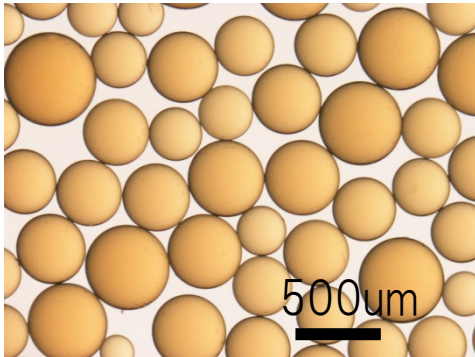


Flowchart of EPA-Et purification



Synthetic adsorbents and ODS are used for purification.

MCC synthetic adsorbents product line-up

	HP20SS	SP700
appearance		
Structure	$\begin{array}{c} \text{---CH}_2\text{---CH---CH}_2\text{---CH---} \\ \qquad \qquad \\ \text{C}_6\text{H}_4 \qquad \text{C}_6\text{H}_4 \\ \qquad \qquad \\ \text{---CH---CH}_2\text{---} \end{array}$	$\begin{array}{c} \text{---CH}_2\text{---CH---CH}_2\text{---CH---} \\ \qquad \qquad \\ \text{C}_6\text{H}_4 \qquad \text{C}_6\text{H}_4 \\ \qquad \qquad \\ \text{---CH---CH}_2\text{---} \quad \text{CH}_2\text{CH}_3 \end{array}$
Ave. particle size(μm)	90*	460*
Peak pore radius (Å)	290*	90*
Surface area(m ² /g)	560*	1100 以上
Pore amount(mL/g)	1.2*	2.2*

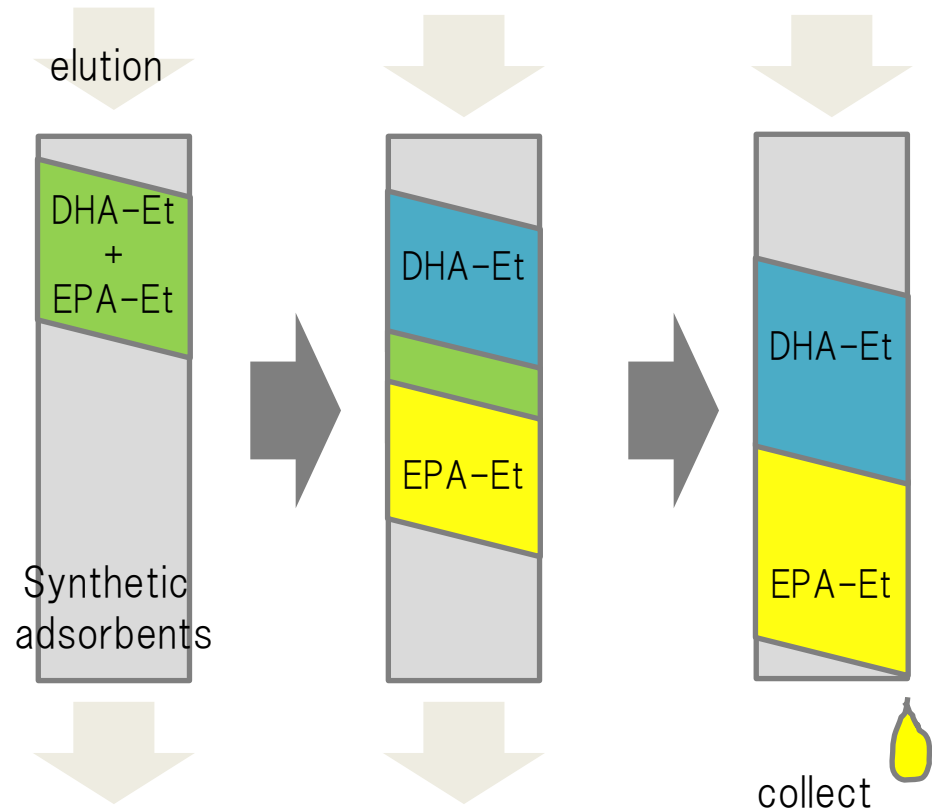
*referential data

Examples of chromatographic separation process for EPA-EE using synthetic adsorbents

Fish oil(make-up);
DHA-Et 30wt%
EPA-Et 70wt%



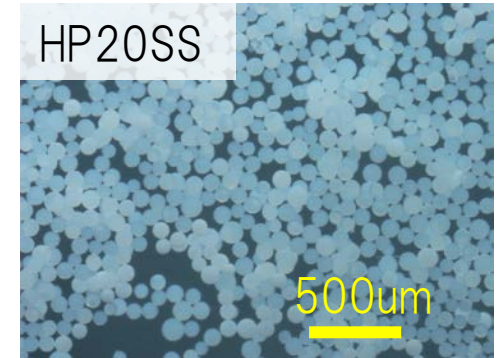
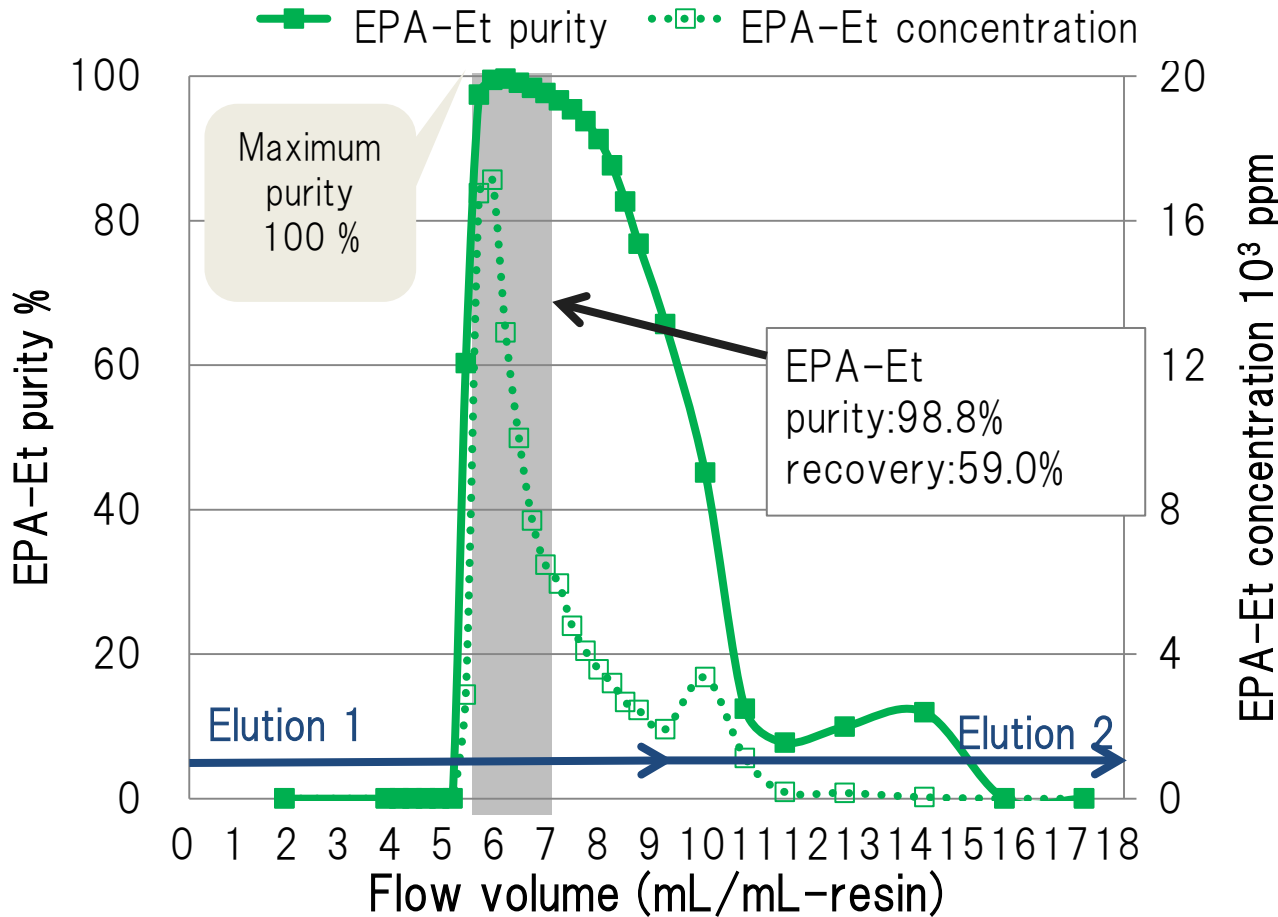
Elution; 90% MeOH水溶液
Load; 40g/L-resin



EPA-Et purity > 96.5%

Japanese Pharmacopoeia, more than 96.5% purity is needed for EPA-EE to be used as prescription medicine.

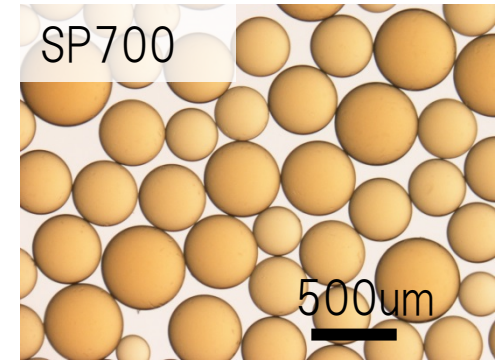
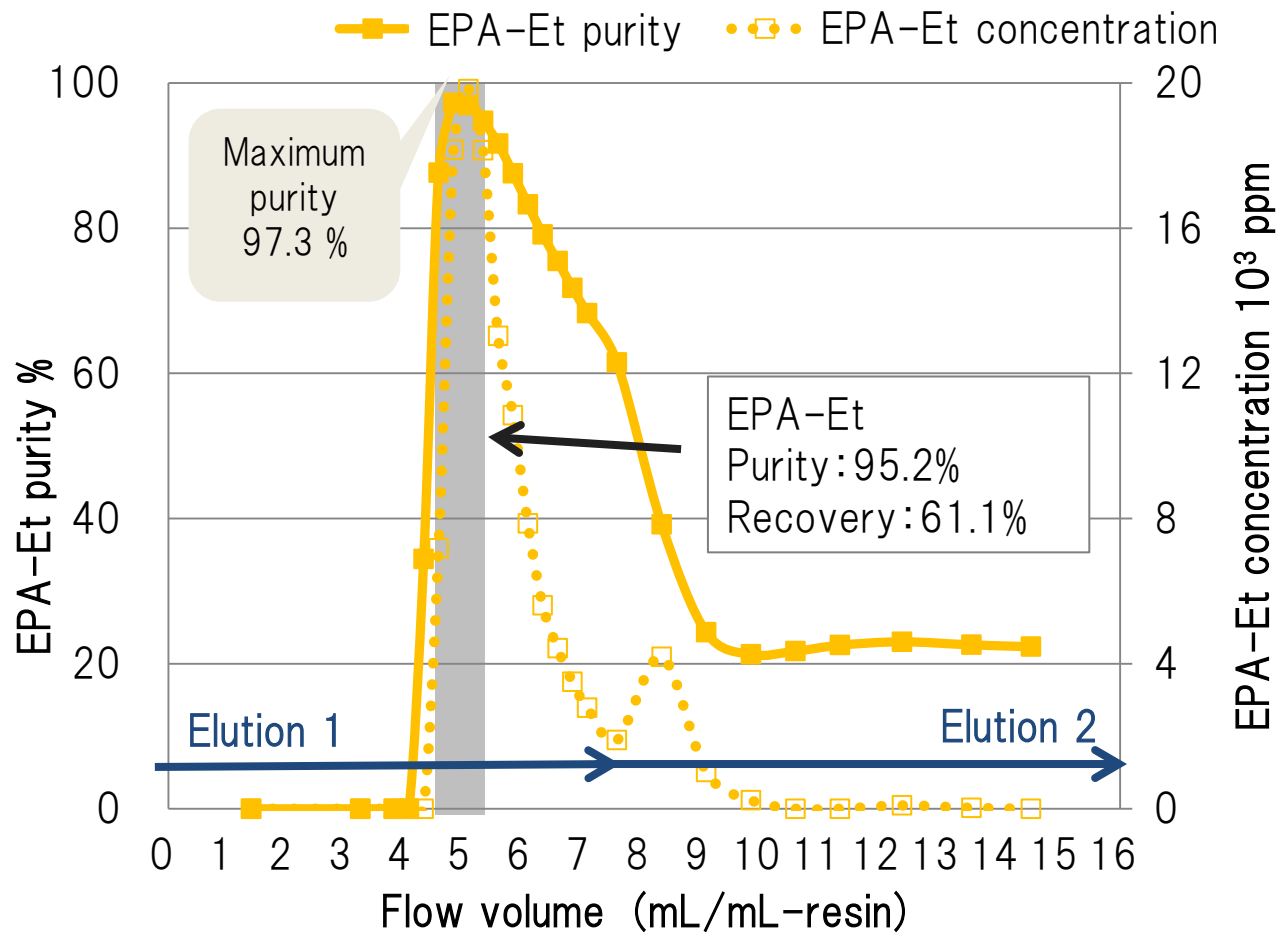
Results of HP20SS



Condition:
 ·Resin; 40 mL
 ·Column; L 520 mm x 10 mm I.D.
 ·Height of resin; 520 mm
 ·Temperature; 40°C
 ·Elusion;
 Elution 1 90%MeOH SV1
 Elution 2 100%MeOH SV3

High purity $\geq 96.5\%$ & High recovery

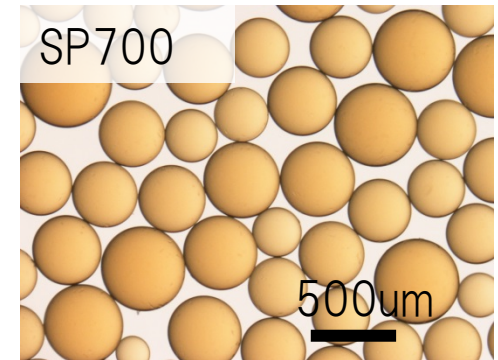
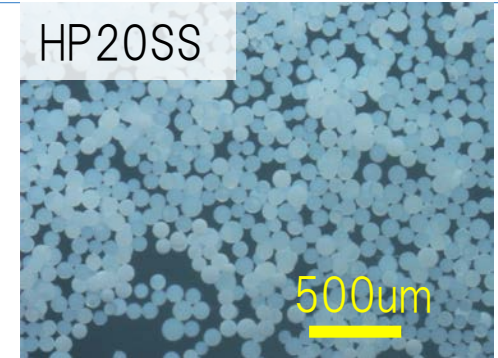
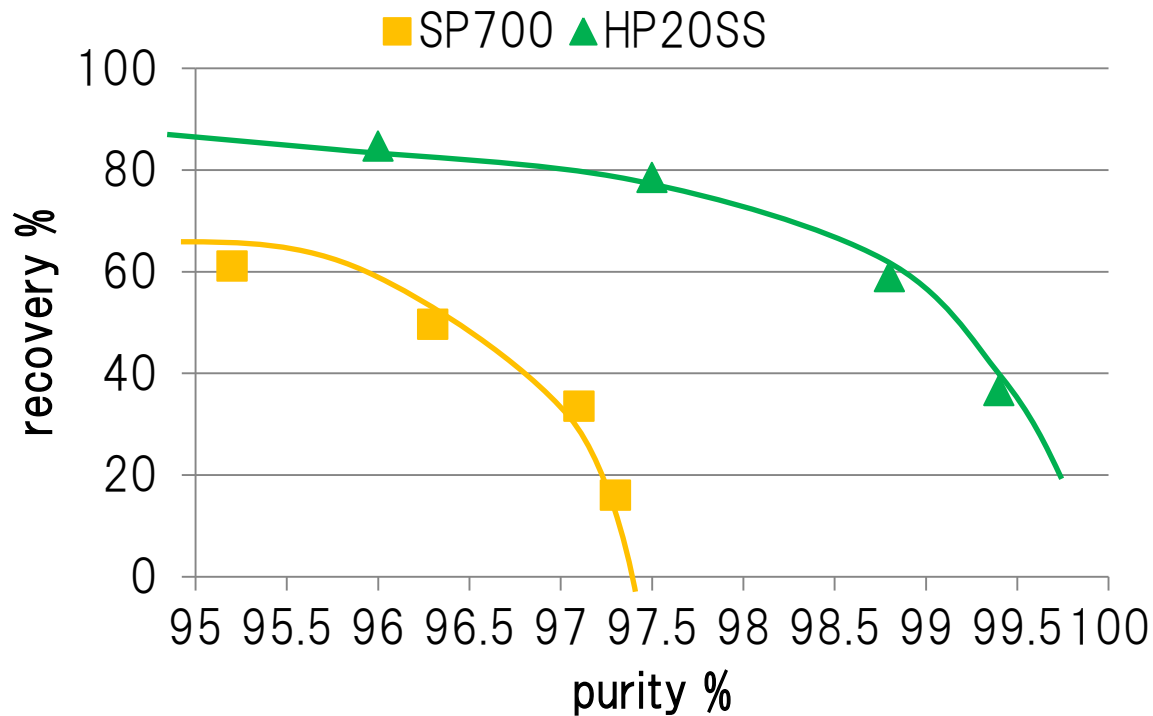
Results of SP700



Condition:
 ·Resin; 180 mL
 ·Column; L 1030 mm x 15 mm I.D.
 ·Height of resin; 1030 mm
 ·Temperature; 40°C
 ·Elusion;
 Elution 1 90%MeOH SV1
 Elution 2 100%MeOH SV3

High purity $\geq 96.5\%$ & High recovery

Purity and recovery



Synthetic adsorbents can separate EPA-EE with more than 98.5% purity. Choice the most suitable synthetic adsorbent for your process.

Purity → HP20SS

Easy use → SP700

Cost calculation(case; 10t/year production)

		SP700	HP20SS	ODS(10 μ m)
Purity	%	96.5	96.5	96.5
Recovery	%	50	82	85
Load	g/L-R	40	40	60
Cycle	cycle/day	2	2	12
Volume of resins	m3/cycle	1.3	0.8	0.1
Volume of MeOH	m3/cycle	8.8	6.9	0.3
Resins	—	¥	¥ ¥	¥ ¥ ¥
Equipment	—	¥	¥ ¥	¥ ¥ ¥
Cost%	%	40	41	100

Production cost can be reduced significantly by use of synthetic adsorbents

MeOH: @10 yen /L
Life: 500cycle

