

# Capabilities and limitations of Se isotopic analysis using hydride generation coupled to MC-ICP-MS

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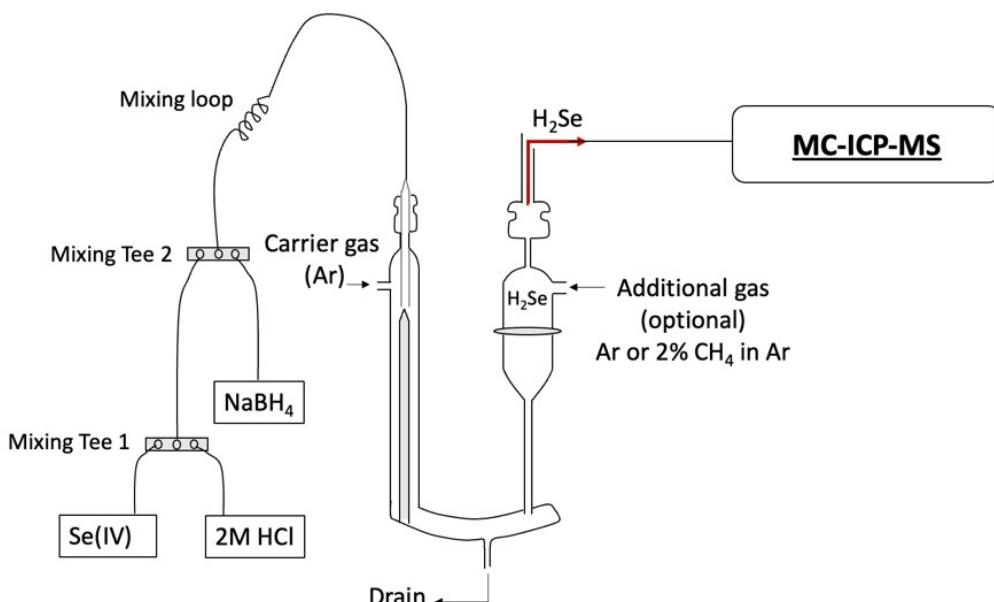


Figure S1: Schematic representation of the different components of the Hydride Generation (HG) unit, coupled to MC-ICP-MS for Se isotope ratio measurements.

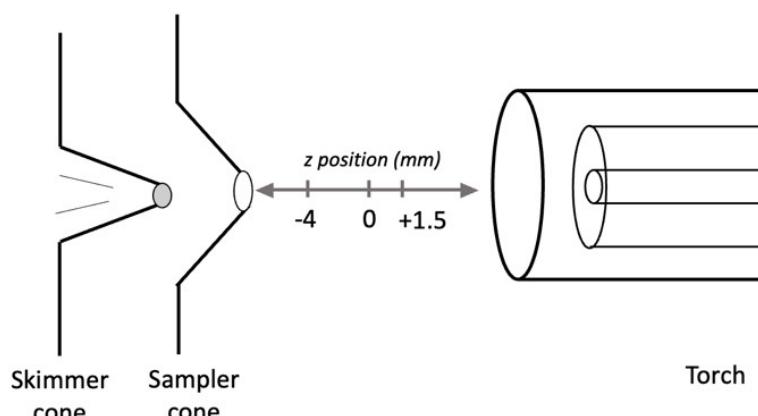


Figure S2 : Schematic representation of the position of the torch (mm) relative to the sampler cone.

Table S1 : Se isotopic composition ( $\delta^{82/78}\text{Se}$  and  $\delta^{82/76}\text{Se}$  in ‰) and the % of ArAr<sup>+</sup> contribution to the signals at  $m/z = 76$  and 78 obtained at different torch positions (+1.5, 0 and -4 mm) and at different Se concentrations (25, 50 and 100  $\mu\text{g L}^{-1}$ ).

Torch position (mm)	Se ( $\mu\text{g L}^{-1}$ )	Mean (n≥3)		2 SD		ArAr <sup>+</sup> contribution	
		$\delta^{82/78}$	$\delta^{82/76}$	$\delta^{82/78}$	$\delta^{82/76}$	% <sup>78</sup> ArAr <sup>+</sup>	% <sup>76</sup> ArAr <sup>+</sup>
1.5	100	-0.67	-0.96	0.10	0.40	0.30%	3.70%
1.5	50	-0.66	-0.92	0.03	0.08	0.60%	7.0%
1.5	25	-0.48	0.98	0.28	2.37	1.10%	13.0%
0	100	-0.69	-0.92	0.06	0.37	0.20%	2.7%
0	50	-0.72	-2.1	0.13	0.24	0.40%	5.0%
0	25	-0.78	-3.04	0.32	0.90	0.80%	9.0%
-4.0	100	-0.7	-1.12	0.03	0.08	0.03%	0.40%
-4.0	50	-0.72	-1.08	0.05	0.04	0.05%	0.70%
-4.0	25	-0.7	-1.15	0.17	0.38	0.10%	1.40%

Table S2 :  $\delta^{82/78}\text{Se}$  and  $\delta^{82/76}\text{Se}$  values (‰) obtained at different As/Se ratios.

As/Se	$\delta^{82/78}$	$\delta^{82/76}$		$\delta^{82/76}$ (corrected for As)	<b>2SE</b>	<b>2SE</b>
		(Not corrected for As)			$\delta^{82/78}$	$\delta^{82/76}$
0	-0.72	-1.13		-1.10	0.03	0.04
0	-0.74	-1.05		-1.02	0.02	0.03
0	-0.68	-1.12		-1.10	0.02	0.04
0.01	-0.71	-1.26		-1.08	0.03	0.04
0.05	-0.73	-1.87		-0.97	0.03	0.03
0.1	-0.69	-2.55		-0.72	0.03	0.04
0.2	-0.75	-3.96		-0.48	0.02	0.03
0.3	-0.68	-5.96		0.16	0.03	0.04
0.5	-0.67	-8.00		0.55	0.03	0.04

Table S3 :  $\delta^{82/78}\text{Se}$  and  $\delta^{82/76}\text{Se}$  values for the different tuna fish organs. The liver samples were measured twice as enough sample was available.

	<b>δ82/78</b>	<b>δ82/76</b>
Liver 1	0.58	0.78
Liver 2	0.51	0.73
Liver 3	0.68	0.85
Liver 1	0.57	0.89
Liver 2	0.48	0.70
Liver 3	0.61	0.90
<b>Mean</b>	<b>0.57</b>	<b>0.81</b>
<b>SD</b>	<b>0.07</b>	<b>0.08</b>
N	6	6
Kidney 1	0.32	0.36
Kidney 2	0.36	0.55
Kidney 3	0.42	0.47

<b>Mean</b>	<b>0.37</b>	<b>0.46</b>
<b>SD</b>	<b>0.05</b>	<b>0.09</b>
N	3	3
Intestine 1	0.32	0.33
Intestine 2	0.48	0.38
Intestine 3	0.43	0.37
<b>Mean</b>	<b>0.41</b>	<b>0.36</b>
<b>SD</b>	<b>0.08</b>	<b>0.03</b>
N	3	3
Spleen 1	0.13	0.17
Spleen 2	0.22	0.31
Spleen 3	0.15	0.21
<b>Mean</b>	<b>0.17</b>	<b>0.23</b>
<b>SD</b>	<b>0.05</b>	<b>0.07</b>
N	3	3