Supplementary Materials:

Table1 Components and concentrations of Hoagland nutrient solution [1]

Macro elements		Trace elements	
Constituent	Concentration (mmol L^{-1})	Constituent	Concentration (μmol L^{-1})
KNO_3	6.00	H_3BO_3	10.00
$Ca(NO_3)_2$	3.50	$MnSO_4 \cdot H_2O$	0.50
KH_2PO_4	1.33	$ZnSO_4 \cdot 7H_2O$	0.50
$MgSO_4 \cdot 7H_2O$	0.50	$CuSO_4 \cdot 5H_2O$	0.20
NaCl	0.48	$(NH4)_6Mo_7O_{24}$	0.01
		Fe-EDTA	200.00

1. Li R , Li D W , Yan A L , et al. The bioaccessibility of iodine in the biofortified vegetables throughout cooking and simulated digestion[J]. Journal of Food Science & Technology, 2018, 55(1):366-375.

Optimization of As speciation analysis

Ammonium nitrate was commonly selected as the mobile phase to separate the inorganic As species because it has a low ionic strength, rarely clogs ICP-MS skimmer cones and helps maintain the stability of plasma and ionization efficiency for ICP-MS determination. In this study, the influence of the mobile phase concentration on the separation performance of As species was investigated. During the experiment, we found that the concentration of ammonium nitrate in the mobile phase had a greater effect on the retention time of As(V) than that of As(III). When the mobile phase varied between 50 and 90 mmol L^{-1}, the retention time of As(III) varied from 2.66 to 2.96 min, while the retention time of As(V) varied from 3.11 to 5.57 min. As shown in Fig.1, when eluted with 50 mmol L^{-1} ammonium nitrate, the retention time of As(III) and As(V) were 2.96 and 5.57 min, while the As(III) and As(V) peaks partially overlapped when the concentration of ammonium nitrate was increased to 70 mmol L^{-1}. Finally, this study chose 60 mmol L^{-1} ammonium nitrate as the optimal separation concentration for their separation effect and shorter retention times of As(III) and As(V) (2.66 min and 3.82 min, respectively).

The study also investigated the effects of pH on the separation of As forms. As shown in Fig.2, when the pH value was 4.8, there was a certain overlap between As(III) and As(V); when the pH value was

increased to 6.8, although the separation effect between As(III) and As(V) was good, the retention time of As(V) was delayed. the pH of 5.8 was the optimal condition and the results revealed that variations in pH had no effect on the separation of As(III), while increasing the pH value both shortened the retention time of As(V). Thus, a pH value of 5.8 was selected as the optimum separation condition.

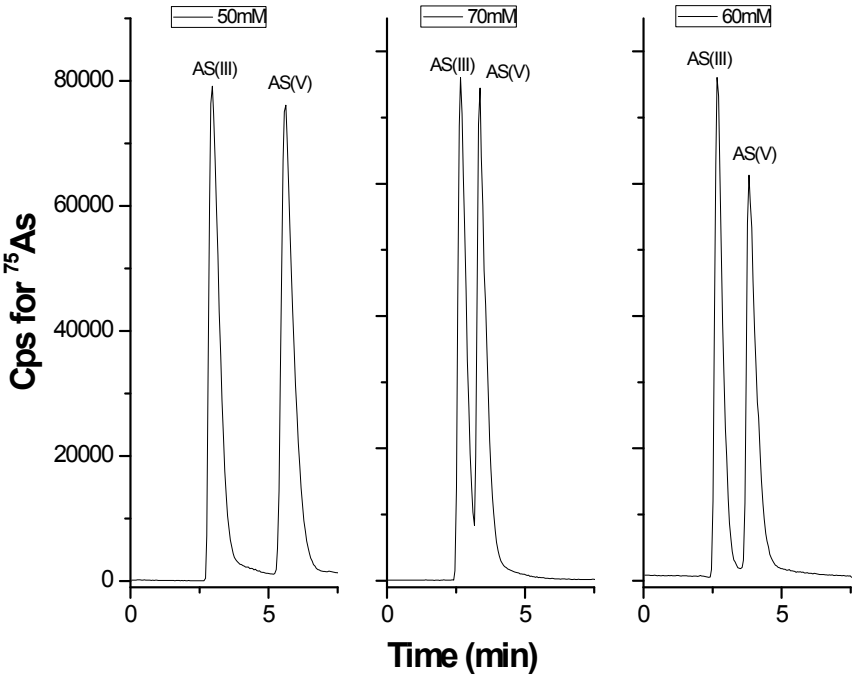

Fig. 1 The effect of NH_4NO_3 concentration on separation of As species (As(III): 100 μg L^{-1}; As(V): 100 μg L^{-1})

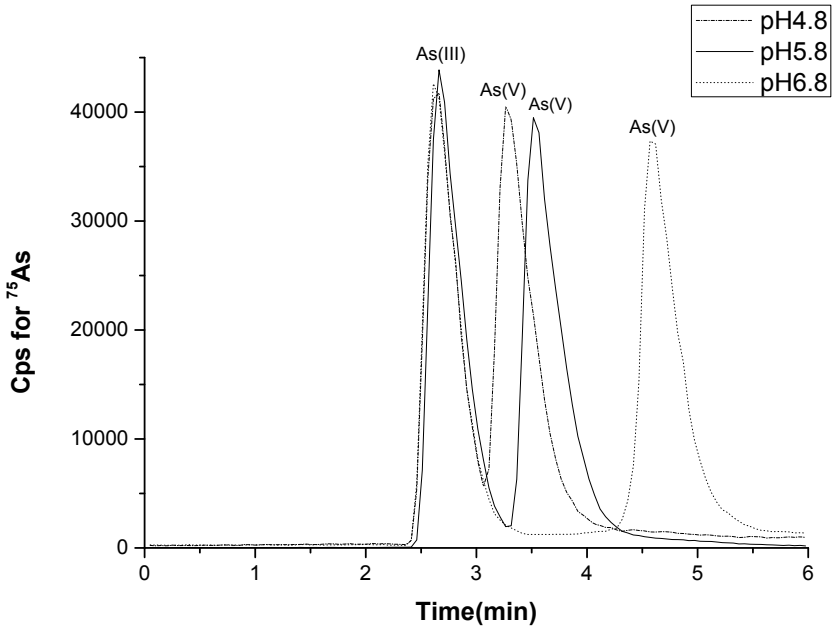

Fig. 2 The effect of pH on As speciation analysis (As(III): 50 μg L^{-1}; As(V): 50 μg L^{-1})