

THE EFFECTS OF PROCESSING ON THE POTASSIUM CONTENT OF POTATOES

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Hyperkalemia is a condition which is frequently associated with renal disease. Patients may need to restrict their intakes of high K content foods, including some fruits, vegetables and wholegrain cereals. K intake is typically restricted to 50-70 mmol daily. Potato, which is a staple vegetable for many Australians, is considered to be a very high K content food, containing an average of 9.9 mmol in 90 g of raw vegetable (Wills et al. 1987).

Potatoes were cooked on a household stove using 15 cm diameter stainless steel saucepans which contained 500 mL of tap water. Five g samples were dry ashed (Wills et al. 1980). The ash was dissolved in 2 mol/L HCl and a 1 in 50 dilution was analysed by atomic absorption spectrometry at 766.8 nm. Four batches of potatoes were tested, with varying cooking conditions. Cooking variables tested were: Rapid Boil (B)/Steamed (St); Unpeeled (U)/Peeled (P); Cut into Quarters (Q)/Cut into 1cm³; Sebago variety (S)/Exton variety (E); Cooking Time (in minutes); Presoaked 30 mins. (Pr); Salted Water (Sa).

Treatment	mg K/90 g potato	% loss	n
E, Raw	16.8	---	2
E, P, Q, St, 30 min	14.8	12.4	2
E, U, Q, B, 30 min	14.8	12.0	2
E, P, Q, B, 30 min	10.6	36.6	2
E, P, Q, B, Sa, 30 min	10.4	38.4	2
E, P, Q, Pr, B, 30 min	10.9	34.9	2
E, P, 1cm ³ , B, 30 min	6.5	60.9	2
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E, Raw	18.8	---	
E, P, 1cm ³ , B, 5 min	14.0	25.6	1
E, P, 1cm ³ , B, 10 min	12.7	32.4	1
E, P, 1cm ³ , B, 15 min	11.3	39.9	1
E, P, 1cm ³ , B, 20 min	8.0	57.4	1
E, P, 1cm ³ , B, 25 min	7.7	59.2	1
E, P, 1cm ³ , B, 30 min	7.2	61.9	1
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S, Raw	8.7	---	10
S, P, 1cm ³ , B, 20 min	3.4	60.7	10

The K content of raw Sebago potatoes (8.7 mmol/90 g) compared favourably with the result of Wills et al. (1984) (9.5 mmol/90 g). Exton potatoes were found to contain approximately twice as much K (17.5 mmol/90 g). Exton potatoes were purchased in Queensland during the winter whereas Sebago potatoes were purchased during summer.

Rapid boiling of 1 cm³ potato pieces was the most effective method of K removal. Most K was lost within the first 20 minutes. After this time potato pieces started to lose structure, mash while cooking, and taste watery.

Rapid boiling of 1 cm³ pieces in 500 mL water for 20 mins produced an average K loss in Sebago potatoes of 5.3 mmol/90 g (60.7%). This loss is both statistically (P<0.01 using Student's paired "t" test) and dietetically significant. It may enable renal patients to consume twice this amount of potato, or to have greater choice of fruits or vegetables than would otherwise be possible.

WILLS, R.B.H., BALMER, N. and GREENFIELD, H. (1980). *Food Technol. Aust.* 32(4): 198.

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