



# Pilot study assessing sodium and potassium intakes in Australian farm families

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## Stroke and blood pressure (BP)







# Sodium and blood pressure

- Excess sodium contributes to  $\uparrow$ BP &  $\uparrow$  risk of CVD
- scarce data on sodium or potassium intake of Australians using 24-hour urinary excretion

		Salt intake		
	Hobart Salt Study	Dietary intervention	Cancer Council Victoria	
	Beard <i>et al</i> 1997	Nowson <i>et al</i> 2006	Huggins <i>et al</i> 2009	
Men	170 (52)	169 (49)	178 (67)	~ 10 g/day
Women	118 (42)	120 (50)	134 (51)	~ 7 g/day







World Health Organisation

Less than 5 grams / salt day

**National Heart Foundation** 

and Australian Division of World Action on Salt and Health (AWASH) Less than 6 grams / salt day

Suggested Dietary Targets (NH&MRC)



http://www.awash.org.au/





## Why does salt matter to farm families?

Blood pressure in Australian adults Carrington et al (2009), Mean ± S.E.M							
	Metropolitan n = 10,649	Regional n = 3176					
Systolic blood pressure (mm Hg)	130 ± 18	134 ± 18					
Diastolic blood pressure (mm Hg)	79 ± 12	80 ± 12					
% high blood pressure	32%	40%					
Family history of CVD	24%	28%					
BMI – normal range	35%	30%					
Waist – normal range	31%	24%					

Australian regional adults are more likely to have high blood pressure and risk factors for heart disease than their metropolitan counterparts





# Aims

- How much salt and potassium are Australian farm families consuming?
- How does this compare to people in capital cities?





# Recruitment : Participants

- Participants invited from current Sustainable Farm Families program
- Aged 18 74 years and farming
- Instructions posted out with 24 hour urine bottle
- Samples brought with them to the SFF workshop held November 2009.
- 100% volunteered to participate
- Results sent back to them personally





Participants Mean (SD)

#### Age: 57.2 (8.1) years

### Mean body mass index (BMI): 26.2 (3.4)

#### 17 men 11 women

#### From Hamilton and Benalla, Victoria





# Methods

- 24 hour urinary sample provided by participants
- Analysis of sodium, potassium, creatinine
- 24 hour urinary analysis is the "gold standard"





Results Mean (SD)

	Females n=11	Males n=17		
Age	56.2 (5.9)	57.3 (9.1)		
BMI (kg/m²)	25.7 (3.7)	26.6 (2.8)		
Urinary excretion				
Sodium (mmol/d)	128.5 (58.6)	163.7 (60.9)		
salt	7.4 grams / day	9.4 grams/day		
Potassium (mmol/d)	82.2 (24.5)	90.0 (21.6)		
Sodium/Potassium ratio	1.56 (0.59)	1.87 (0.67)		
Blood pressure (mmHg)				
Systolic	123.9 (12.9)	131.4 (17.0)		
Diastolic	80.4 (7.4)	79.7 (7.4)		
% Hypertensive	36%	38%		







\*Nutrient Reference Values for Australia and New Zealand





Targets



\*Nutrient Reference Values for Australia and New Zealand



#### Comparison of farm families and city dwellers Mean ± SEM

		Females			Males	
	Farm^ n=11	City^^ n=408	Р	Farm^ n=17	City^^ n=376	Р
Age	56.2 ± 1.8	63.7 ± 0.3	<0.001	57.3 ± 2.2	64.3 ± 0.3	<0.001
BMI (kg/m²)	25.7 ± 1.4	28.0 ± 0.2	0.14	26.6 ± 0.7	28.4 ± 0.2	0.07
Na (mmol/d)	129 ± 18	134 ± 3	0.74	164 ± 15	178 ± 3	0.37
salt (g/day)	7.4	7.7		9.4	10.2	
K (mmol/d)	82 ± 7	77 ± 1	0.48	90 ± 5	88 ± 2	0.80
Na/K ratio	1.6 ± 0.2	$1.8 \pm 0.0$	0.23	$1.9 \pm 0.2$	$2.2 \pm 0.0$	0.17

^ Huggins et al 2010

Muggins et al 2009

Na – sodium

K – potassium





# Conclusion

- Most participants were consuming excessive amounts of salt
- The dietary intake of salt and potassium for farm families is similar to people in capital cities

 Preliminary findings Pilot study

 A population wide strategy is required to reduce consumption of salt to recommended levels





## Sources of dietary salt

School of Exercise and Nutrition Sciences

#### 75% of your salt intake





A population wide strategy to reduce consumption of salt to recommended levels requires a significant reduction of salt in the foods we purchase, i.e. food manufacturers need to reduce salt of food supply





## Effect of processing on salt content







## Future research

- This pilot study shows that measuring the salt intake of farm families is feasible
- A larger study is necessary to characterise the pattern of sodium and potassium intake in farm families