

やハーブについて、“平均的な”摂取量を推計するためには、輸入、流通のデータ等も活用していく必要があると考えられる。

今回、中心的な対象食品とした白菜については、総務省の家計調査データや流通のデータをみても季節変動が大きく、国民健康・栄養調査が実施される11月は、摂取量が最も高くなる時期のひとつであろう。しかし、個人レベルで、白菜を含めて個々の食品について季節的な変動や、1日と複数日の平均等に関しての詳細な報告はきわめて少ないようである。そこで、国立健康・栄養研究所においては現在、食品中の化学物質の暴露評価に対しても十分活用できる摂取量データベースを構築しており、中間的なデータセットを用いて予備的な検討を行った。摂取者における中央値のみならず、95パーセンタイル等の“多食者”の1日あたりの摂取量をみても、季節差が確認された。今後、データセットの完成の後に詳細な検討を行う予定である。

一方、食品中の残留量を実際に測定してみた結果については、97.5パーセンタイル値を、統計的に信頼度を高く算出するには、本来100検体以上分析するのが望ましいが、予算の都合上最小限とされている50検体しか分析できなかったため、不確かさは100検体以上分析した場合より大きくなっている。

今回算出された変動係数は、今年のトマト、キュウリ同様、現在JMPRで用いられている3よりも小さい値であったが、今回結球しているためより変動が少なく思われたハクサイのほうが、結球せず表面に毛が生えておりより残留しやすいダイコン葉の変動率の方が大きくなった。また、予想通り、ダイコン葉のほうが残留濃度ははるかに高くなった。

また、今回既存資料を基に整理した加工係数については、すべての農薬・加工食品を網羅しているわけではないが、暴露評価をより精密にするのに活用できる。

## E. 結論

食品中に残留する農薬や動物用医薬品等の暴露評価をより科学的に行っていくための基礎となる、食品摂取量データベースの構築及び活用方法の検討を行った。今日的な課題である、急性暴露影響の評価を行うための基礎となる摂取量分布データや、国民健康・栄養調査を含め、一般の食事調査においては十分な把握がなされにくいスパイスやハーブについて、摂取量データの利用可能性の検討を行った。

また、JMPRによって急性参照量が設定されているエンドスルファンについて、ハクサイと大根葉を用いて残留試験を行い、各50検体の残留濃度を分析した結果、それぞれ残留濃度の変動係数が2.3及び1.3と算出された。さらに、同専門家会議によって推定された農作物から加工食品への加工係数のデータベースを作成した。

来年度は、摂取量データと残留試験データ、及び既存資料から得られた加工係数等を組み合わせ、統計モデルを用いた暴露評価を行う予定である。

## F. 研究発表

### 学会発表

- 1) 藤井紘子、齋藤京子、草間かおる、由田克士、吉池信男：複数日の食物摂取量調査にみられる季節変動—食品群別摂取量に着目して— 第64回日本公衆衛生学会、2005.9.16 (札幌)
- 2) 石脇亜紗子、藤井紘子、齋藤京子、野末みほ、由田克士、吉池信男：食品中の化学物質の急性暴露評価のための特定食品の“多食者”の把握。(発表予定 2006.5 日本栄養食糧学会)

### 論文発表

なし

## G. 知的所有権の取得状況

なし



附表 2

Annex: Processing Factors Estimated by JMPR for Certain Pesticides (1998-2004)

Raw agricultural Commodities	Processed food	2,4-D 2001	2-phenylphenol 1999	acephate 2003	benomyl 1998	bifenthrin 1999	buprofezin 1999	captan 2000	carbaryl 2002	chlorpyrifos 2004	cyprodinil 2003
citrus	juice	0.1		0.34					0.03	0.03	
citrus	marmalade										
citrus	fruit, dried										
lemon	juice										
lemon	pulp										
orange	washed										
orange	juice		0.031		0.40		0.18				
orange	juice, pasteurized										
orange	pulp						0.17				
orange	pulp, dry		5.4				0.41				
orange	marmalade										
apple	washed										
apple	juice, raw										
apple	juice			1	0.245	0.14		0.3		0.15	0.03
apple	juice, pasteurized										
apple	sauce, raw										
apple	sauce				0.13						
apple	preserve										
apple	fruit, dried							0.85			
apple	canned slice										
apple	puree				0.47						
apple	compote										
pear	juice										
pear	sauce										
pear	preserve										
pear	fruit, dried										
cherry	washed										
cherry	juice					0.17					
cherry	preserves					0.59					
cherry	jam					0.45					
peach	washed										
peach	juice										
peach	preserve										

Raw agricultural Commodities	Processed food	deltamethrin 2002	diazinon 1999	diffubenzuron 2002	dimethoate 2003	diphenylamine 2001	dodine 2003	fenamiphos 1999	fenpyroximate 1999	fenthion 2000
citrus	juice									
citrus	marmalade									
citrus	fruit, dried									
lemon	juice									
lemon	pulp									
orange	washed									
orange	juice				0.14					
orange	juice, pasteurized									
orange	pulp									
orange	pulp, dry				2.1					
orange	marmalade									
apple	washed									0.5
apple	juice, raw									0.9
apple	juice	<0.09	<0.01			0.051	0.09	0.78	0.42	0.8
apple	juice, pasteurized			<0.12						
apple	sauce, raw									0.7
apple	sauce		<0.01							0.5
apple	preserve									
apple	fruit, dried									
apple	canned slice		<0.01							
apple	puree								0.54	
apple	compote									
pear	juice									
pear	sauce									
pear	preserve									
pear	fruit, dried									
cherry	washed									
cherry	juice									
cherry	preserves									
cherry	jam									
peach	washed									1.06
peach	juice									0.37
peach	preserve									0.16

Raw agricultural Commodities	Processed food	fludioxonil 2004	imidacloprid 2002	metalaxyl M 2004	methamidophos 2003	methomyl 2001	methoxyfenozide 2003	omethoate 2003	parathion 2000
citrus	juice		0.28		0.4	0.021			
citrus	marmalade		0.625						
citrus	fruit, dried								
lemon	juice	0.031							
lemon	pulp	2.1							
orange	washed			0.97					
orange	juice							0.21	
orange	juice, pasteurized			0.060					
orange	pulp			0.091					
orange	pulp, dry							1.7	
orange	marmalade			0.39					
apple	washed								
apple	juice, raw								
apple	juice		0.656		1	0.29	0.3		0.072
apple	juice, pasteurized								
apple	sauce, raw								
apple	sauce		0.75						
apple	preserve								
apple	fruit, dried		0.865						
apple	canned slice								
apple	puree								
apple	compote								
pear	juice								
pear	sauce								
pear	preserve								
pear	fruit, dried								
cherry	washed								
cherry	juice								
cherry	preserves		<0.6						
cherry	jam								
peach	washed				0.75				
peach	juice				0.33				
peach	preserve		<0.38		0.52				

Raw agricultural Commodities	Processed food	parathion-methyl 2000	phosalone 1999	phosmet 2002	piperonyl butoxide 2002	propargite 2002	propineb 2004	pyrethrin 2000	pyriproxyfen 2000	tebufenozide 1999
citrus	juice			<0.05	<0.01			<0.66		
citrus	marmalade									
citrus	fruit, dried							8.55		
lemon	juice									
lemon	pulp									
orange	washed									
orange	juice					<0.09			<0.03	
orange	juice, pasteurized									
orange	pulp								6.3	
orange	pulp, dry									
orange	marmalade									
apple	washed									
apple	juice, raw									
apple	juice	<0.25				0.05				0.125
apple	juice, pasteurized									
apple	sauce, raw									
apple	sauce					2.6				
apple	preserve									
apple	fruit, dried									
apple	canned slice									
apple	puree									0.25
apple	compote		0.14							
pear	juice									
pear	sauce									
pear	preserve									
pear	fruit, dried									
cherry	washed						0.63			
cherry	juice						0.55			
cherry	preserves						0.15			
cherry	jam						0.35			
peach	washed									
peach	juice	<0.33								
peach	preserve									

Raw agricultural Commodities	Processed food	thiabendazole 2000	thiodicarb 2001	tolyfluanid 2002	trifloxystrobin 2004
citrus	juice		0.016		
citrus	marmalade				
citrus	fruit, dried				
lemon	juice				
lemon	pulp				
orange	washed				
orange	juice				<0.19
orange	juice, pasteurized	0.08			
orange	pulp				
orange	pulp, dry				3.4
orange	marmalade	0.3			
apple	washed				
apple	juice, raw				
apple	juice			0.09	0.16
apple	juice, pasteurized	0.47			
apple	sauce, raw				
apple	sauce	0.41		0.32	0.48
apple	preserve			<0.06	0.48
apple	fruit, dried				0.39
apple	canned slice				
apple	puree				
apple	compote				
pear	juice			0.03	0.16
pear	sauce				0.48
pear	preserve			<0.02	0.48
pear	fruit, dried				0.39
cherry	washed				
cherry	juice				
cherry	preserves				
cherry	jam				
peach	washed				
peach	juice				
peach	preserve				<0.05

Raw agricultural Commodities	Processed food	benomyl 1998	bitertanol 1999	captan 2000	carbaryl 2002	chlorpyrifos 2004	cyprodinil 2003	deltamethrin 2002	dicloran 2003	dimethoate 2003
peach	jam									
peach	canned									
plum	juice									
plum	dried (prunes)			0.1			1.7			
plum	preserves									
plum	purée									
plum	jam		0.605							
black currant	washed									
black currant	juice									
black currant	jelly									
grapes	juice				0.65	0.06	0.15		1.1	
grapes	dried (raisins)	1.3		1.5	1.2	0.21	2.1			
grapes	young wine									
grapes	wine (age not specified)	0.53				0.08	0.078			
grapes	wine (<100 days)									
grapes	wine (>100 days)								0	
grapes	sun-dried									
strawberry	washed									
strawberry	juice									
strawberry	preserves									
strawberry	jam									
strawberry	canned									
strawberry	juice									
pineapple	canned									
olive	unwashed, before processing									
olive	washed, before processing									
olive	processed									0.21
olive	virgin oil							1.5		0.43
olive	refined oil							1.6		0.016
olive	oil (type not specified)				0.82					
beans, green with pods	cooked									
beans, green with pods	preserved									



Raw agricultural Commodities	Processed food	ethephon 1999	famoxadone 2003	fenamiphos 1999	fenpyroximate 1999	fenthion 2000	fludioxonil 2004	folpet 2002	imidacloprid 2002	metalaxyl M 2004
peach	jam					0.25			<0.38	
peach	canned									
plum	juice						0.10			
plum	dried (prunes)						1.91			
plum	preserves						0.50			
plum	purée						0.80			
plum	jam									
black currant	washed									
black currant	juice									
black currant	jelly									
grapes	juice		0.01	<1			0.92	<0.003	0.73	0.36
grapes	dried (raisins)	2.7	1.9	1.57			1.1	3.2	1.05	
grapes	young wine									0.87
grapes	wine (age not specified)		0.01		0.07			0	1.17	0.66
grapes	wine (<100 days)						0.30			
grapes	wine (>100 days)						0.036			
grapes	sun-dried									
strawberry	washed									
strawberry	juice						0.16			
strawberry	preserves						0.62			
strawberry	jam						0.34			
strawberry	canned									
pineapple	juice	0.39		1.2						
pineapple	canned	0.28								
olive	unwashed, before processing									
olive	washed, before processing									
olive	processed									
olive	virgin oil									
olive	refined oil									
olive	oil (type not specified)									
beans, green with pods	cooked								0.975	
beans, green with pods	preserved								0.43	

Raw agricultural Commodities	Processed food	methamidophos 2003	methomyl 2001	methoxyfenozide 2003	omethoate 2003	paraquat 2004	parathion-methyl 2000	propargite 2002
peach	jam	0.62						
peach	canned							
plum	juice							
plum	dried (prunes)							
plum	preserves							
plum	purée							
plum	jam							
black currant	washed							
black currant	juice							
black currant	jelly							
grapes	juice			0.3			0.06	0.10
grapes	dried (raisins)			2.2			1.4	1.6
grapes	young wine							
grapes	wine (age not specified)		0.3	0.4			0.15	0.02
grapes	wine (<100 days)							
grapes	wine (>100 days)							
grapes	sun-dried							
strawberry	washed							
strawberry	juice							
strawberry	preserves							
strawberry	jam							
strawberry	canned							
pineapple	juice							
pineapple	canned							
olive	unwashed, before processing					0.57		
olive	washed, before processing					<0.43		
olive	processed				0.12			
olive	virgin oil				0.019	<0.35		
olive	refined oil				0.019	<0.35		
olive	oil (type not specified)							
beans, green with pods	cooked							
beans, green with pods	preserved							

Raw agricultural Commodities	Processed food	pyraclostrobin 2004	spinosad 2004	tebufenozide 1999	thiodicarb 2001	toylfluanid 2002	trifloxystrobin 2004
peach	jam						
peach	canned				<0.06		
plum	juice						
plum	dried (prunes)						1.5
plum	preserves						
plum	purée						
plum	jam						
black currant	washed					0.84	
black currant	juice					0.26	
black currant	jelly					0.56	
grapes	juice	0.013				<0.53	0.24
grapes	dried (raisins)	3.1	1.6			3.2	2.3
grapes	young wine						
grapes	wine (age not specified)	<0.1	<0.33	0.25	0.29	1.0	0.15
grapes	wine (<100 days)						
grapes	wine (>100 days)						
grapes	sun-dried						
strawberry	washed					0.59	
strawberry	juice						
strawberry	preserves						0.29
strawberry	jam					0.22	0.62
strawberry	canned					0.21	
pineapple	juice						
pineapple	canned						
olive	unwashed, before processing						
olive	washed, before processing						
olive	processed						
olive	virgin oil						
olive	refined oil						
olive	oil (type not specified)						
beans, green with pods	cooked						
beans, green with pods	preserved						

Raw agricultural commodities	Processed food	acephate 2003	aldicarb 2001	benomyl 1998	bifertanol 1999	captan 2000	carbaryl 2002	chlormequat 2000	chlorpropham 2001	chlorpyrifos 2004	clethodim 2002
common beans	cooking	0.5									
soya bean	crude oil	<0.425					0.9			0.4	
soya bean	refined oil									0.4	
soya bean	refined bleached oil									0.5	
potato	washed										
potato	peeled								0.027		
potato	washed, peeled										
potato	chips		0.48								
potato	frozen fries		0.29								
potato	cooked fries		0.39								
potato	granules										
potato	flakes		0.75								
potato	micro-waved		0.7								
potato	cooked, with skin								0.33		
tomato	washed										
tomato	peeled										
tomato	juice			0.27	0.135	0.1	0.5			0.2	0.77
tomato	juice, sterilized										
tomato	canned										
tomato	preserved			0.365							
tomato	paste				2.1		2			0.2	3.4
tomato	purée			0.66		0.1					2.2
tomato	ketchup			0.62							
mushroom	dehydrated										
mushroom	preserved										
barley	malt								0.69		
barley	beer								0.015		
barley	bread										
barley	pearl								0.06		

Raw agricultural commodities	Processed food	cyprodinil 2003	esfenvalerate 2002	ethephon 1999	famoxadone 2003	fenitrothion 2004	fipronil 2001	fludioxonil 2004	folpet 2002	imidacloprid 2002	iprodione 2001
common beans	cooking										
soya bean	crude oil										
soya bean	refined oil										
soya bean	refined bleached oil										
potato	washed										
potato	peeled										
potato	washed, peeled										
potato	chips					<0.221				1.35	
potato	frozen fries										
potato	cooked fries										
potato	granules									0.92	
potato	flakes					0.274					
potato	micro-waved										
potato	cooked, with skin										
tomato	washed										
tomato	peeled										
tomato	juice	0.17		0.34	0.22			0.22		1.37	0.55
tomato	juice, sterilized										
tomato	canned										
tomato	preserved									0.91	
tomato	paste	0.86	0.46	0.75	1.3			1.4	<0.028	5.73	
tomato	purée		0.51		0.44				<0.028	2.3	0.55
tomato	ketchup									2.0	0.99
mushroom	dehydrated										
mushroom	preserved										
barley	malt					0.20					
barley	beer	<0.01			0.42						
barley	bread				0.5						
barley	pearl										

Raw agricultural commodities	Processed food	methamidophos 2003	methomyl 2001	methoxyfenozide 2003	oxamyl 2002	paraquat 2004	piperonyl butoxide 2002	pirimiphos-methyl 2003	prochloraz 2004
common beans	cooking	0.83							
soya bean	crude oil	<0.5	1						
soya bean	refined oil		1						
soya bean	refined bleached oil								
potato	washed								
potato	peeled					0.27			
potato	washed, peeled								
potato	chips					>0.95			
potato	frozen fries								
potato	cooked fries								
potato	granules					>2.7			
potato	flakes								
potato	micro-waved								
potato	cooked, with skin								
tomato	washed								
tomato	peeled			0.3					
tomato	juice	0.74		0.3	0.12		0.15		
tomato	juice, sterilized								
tomato	canned				0.073				
tomato	preserved								
tomato	paste		0.04	2.2	0.36				
tomato	purée	0.84			0.16		0.33		
tomato	ketchup				0.24				
mushroom	dehydrated								3.7
mushroom	preserved								0.4
barley	malt								
barley	beer							<0.002	0.09
barley	bread								
barley	pearl								

Raw agricultural commodities	Processed food	propargite 2002	propineb 2004	pyraclostrobin 2004	pyrethrin 2000	thiabendazole 2000	thiodicarb 2001	tolylfluanid 2002	trifloxystrobin 2004
common beans	cooking								
soya bean	crude oil								
soya bean	refined oil								
soya bean	refined bleached oil								
potato	washed					0.2			
potato	peeled								
potato	washed, peeled					0.03			
potato	chips								<0.42
potato	frozen fries								
potato	cooked fries								
potato	granules								
potato	flakes								<0.42
potato	micro-waved								
potato	cooked, with skin								
tomato	washed		0.45						
tomato	peeled								
tomato	juice		0.12		<0.48			0.52	
tomato	juice, sterilized						0.18		
tomato	canned	0.05							
tomato	preserved		0.15				0.28		
tomato	paste		1.1				0.73	4.0	1.6
tomato	purée	1.2			<0.48		0.31	1.7	0.56
tomato	ketchup		0.12						
mushroom	dehydrated								
mushroom	preserved								
barley	malt			1					
barley	beer			<0.6					0.04
barley	bread								
barley	pearl								

Raw agricultural commodities	Processed food	carbaryl 2002	chlormequat 2000	chlorpyrifos 2004	clethodim 2002	deltamethrin 2002	fenitrothion 2004	flutolanil 2002	foipet 2002	methomyl 2001
maize	coarse starch, wet milling									
maize	starch, wet milling									
maize	crude oil, wet milling			3						
maize	crude oil, dry milling									
maize	refined oil, wet milling			3.2						
maize	refined oil, dry milling									
maize	oil, dry milling					18				
maize	oil, wet milling									
maize	oil, edible	3.3								0.18
maize	oil, crude (process not specified)									
maize	germ, dry milling					0.32				
maize	grits, dry milling									
maize	grits									
maize	meal, dry milling									
maize	meal									
maize	coarse meal, dry milling									
maize	flour, dry milling			1.8						
maize	flour									
maize	starch									
oat	flake		0.21							
rice	cleaned							0.86		
rice	husked			0.13	0.25	0.15	0.64	0.32	0.32	
rice	polished	0.02		0.07		<0.06	0.15	<0.16	<0.16	
rice	cooked, husked						0.11			
rice	cooked, polished						0.04			
rice	washed, polished						0.046			
rice	cooked, washed, polished						0.020			
rye	bran		3.2							
rye	flour		0.99							



Raw agricultural commodities	Processed food	paraquat 2004	parathion 2000	parathion-methyl 2000	piperonyl butoxide 2002	propargite 2002	spinosad 2004	trifloxystrobin 2004
maize	coarse starch, wet milling	<0.25						
maize	starch, wet milling	<0.25	<0.28					
maize	crude oil, wet milling	<0.25				5.6		
maize	crude oil, dry milling	1.5				2.9		
maize	refined oil, wet milling					5.2		
maize	refined oil, dry milling	<0.25				2.9		
maize	oil, dry milling						0.28	
maize	oil, wet milling						1.1	
maize	oil, edible		2.4	1.03				
maize	oil, crude (process not specified)		2.3	1.33	<2.7			
maize	germ, dry milling	0.3						
maize	grits, dry milling	0.25-0.5	0.99					
maize	grits					0.9	0.082	
maize	meal, dry milling		0.74					
maize	meal			0.46		1.1		
maize	coarse meal, dry milling	1						
maize	flour, dry milling	0.5	0.68					
maize	flour			0.41		1.6	0.19	
maize	starch			<0.09				
oat	flake							
rice	cleaned							
rice	husked						0.11	
rice	polished						0.022	0.18
rice	cooked, husked							
rice	cooked, polished							
rice	washed, polished							
rice	cooked, washed, polished							
rye	bran							
rye	flour							

Raw agricultural commodities	Processed food	carbaryl 2002	chlormequat 2000	chlorpyrifos 2004	clethodim 2002	cyprodinil 2003	deltamethrin 2002	dimethipin 2001	dimethoate 2003
rye	wholemeal		1.3						
rye	bread, wholemeal		0.95						
sorghum	hulled grain								
sorghum	dry milled bran								
sorghum	coarse grits, dry milled								
sorghum	grit								
sorghum	flour, dry milled								
sorghum	flour						0.33		
sorghum	wet milled bran								
sorghum	starch, wet milled								
sorghum	starch						0.04		
sorghum	germ, wet milled								
wheat	bran	1	3.6			3.0	3.3		
wheat	flour	0.09	0.41			0.27	0.31		0.079
wheat	meal								
wheat	wholemeal		1.2				0.91		0.19
wheat	flour, wholemeal					0.92			
wheat	bread, white						0.14		
wheat	bread (type not specified)								
wheat	bread, wholemeal		0.71			0.52	0.42		
wheat	germ	0.49					1.2		
wheat	noodle, white						0.13		
wheat	noodle, yellow alkaline						0.17		
cotton seed	oil, crude			1.4					<0.2
cotton seed	oil, refined			0.2					<0.2
peanut	meal								
peanut	crude oil								
peanut	refined oil								

Raw agricultural commodities	Processed food	famoxadone 2003	fenitrothion 2004	imidacloprid 2002	methomyl 2001	methoxyfenozone 2003	omethoate 2003	oxamyl 2002	paraquat 2004	parathion 2000
rye	wholemeal									
rye	bread, wholemeal									
sorghum	hulled grain								0.07	
sorghum	dry milled bran								3.9	
sorghum	coarse grits, dry milled								0.17	
sorghum	grit									0.46
sorghum	flour, dry milled								0.14	
sorghum	flour									0.40
sorghum	wet milled bran								2.3	
sorghum	starch, wet milled								0.07	
sorghum	starch									0.015
sorghum	germ, wet milled								0.52	
wheat	bran	2	3.95	3.5	1.9					4.6
wheat	flour	0.5	0.235	0.5	0.02		0.071			0.35
wheat	meal									
wheat	wholemeal	0.5					0.1			
wheat	flour, wholemeal									
wheat	bread, white		0.10							
wheat	bread (type not specified)									
wheat	bread, wholemeal		0.38							
wheat	germ				0.92					
wheat	noodle, white									
wheat	noodle, yellow alkaline									
cotton seed	oil, crude					0.32		<0.008	<0.006	
cotton seed	oil, refined				0.16			<0.008		
peanut	meal							<0.17		
peanut	crude oil							<0.17		
peanut	refined oil							<0.17		

Raw agricultural commodities	Processed food	parathion-methyl 2000	piperonyl butoxide 2002	pirimiphos -methyl 2003	prochloraz 2004	propargite 2002	pyraclostrobin 2004	spinosad 2004	trifloxystrobin 2004
rye	wholemeal								
rye	bread, wholemeal								
sorghum	hulled grain								
sorghum	dry milled bran								
sorghum	coarse grits, dry milled								
sorghum	grit								
sorghum	flour, dry milled								
sorghum	flour								
sorghum	wet milled bran								
sorghum	starch, wet milled								
sorghum	starch								
sorghum	germ, wet milled								
wheat	bran	2.2	2.7	5.1	4.3		<0.6	2.0	2.7
wheat	flour	0.39	0.31	0.17	0.23		<0.6	0.26	0.4
wheat	meal								0.4
wheat	wholemeal		0.98						0.5
wheat	flour, wholemeal			0.71					
wheat	bread, white			0.097					
wheat	bread (type not specified)				1.3			0.14	
wheat	bread, wholemeal			0.36					0.25
wheat	germ		3.0				0.8		<0.67
wheat	noodle, white								
wheat	noodle, yellow alkaline								
cotton seed	oil, crude	0.44							
cotton seed	oil, refined	0.33				1.2			
peanut	meal					0.56			
peanut	crude oil					3.0			
peanut	refined oil					2.5			