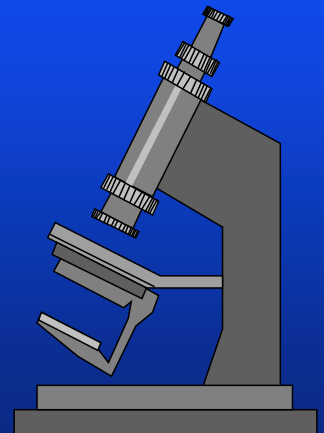


# Sugar

Exploding the myths about sweet foods

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# Overview

- A little history
- Myths about sugar:
  - we eat way too much of it
  - causes overweight by stimulating appetite, increasing fat intake
  - makes blood sugar levels soar
  - causes micronutrient deficiencies
  - it's the key factor in dental caries
- Why reducing sugar intake could do more harm than good

# The meaning of 'sweet'

- tasting like sugar or honey
- smelling like roses or perfumes
- melodious
- fresh and sound
- highly gratifying or attractive
- dear, beloved, darling
- amiable, gentle, easy
- very pretty

# Sweetness = goodness

- sweetheart, sweetie, sweetie-pie
- honeybun, honeybunch, sugarplum
- sweet success
- home sweet home
- honeymoon - a time of bliss
- honeyed words are flattering

# Evolutionary aspects

- Primate evolution
  - diet of fruits and berries (ie sugars)
- All humans have the enzyme 'sucrase'
- Newborns show preference for sweet solutions
- Hunter-gatherer diets
  - honey, honey ants, dried fruits, no starch
- Apiculture (bee-keeping)
  - widespread, even among poor

# A little history

- 10,000 yrs ago - Agricultural revolution  
–sugar cane cultivated in PNG
- 4500 yrs ago - apiculture well established
- 2300 yrs ago - Egypt
- 1300 yrs ago - Arabia
- 1100 yrs ago - Japan

# More history

- 500 yrs ago - sugar beet grown in Europe
  - sugar was rare and expensive, honey much cheaper
- 200-150 yrs ago - Industrial Revolution
  - sugar consumption increased dramatically
- 20th century in developed nations
  - sugar consumption reached steady state

# Sugars in food

- **Glucose**
- **Fructose**
- **Sucrose**
  - split to glucose and fructose during digestion
- **Lactose** (milk sugar)
  - split to glucose and galactose



# Sweeteners used through the ages

- honey
- honey ants
- grape sugar
- dates
- maple sugar
- sorghum
- corn syrup solids (from maize starch)
- sugar beets
- sugar cane
- sugar alcohols (eg sorbitol)
- intense sweeteners (eg saccharin)

# Do we eat too much sugar?

Refined or added sugars

'Per capita' consumption statistics

130 g/day

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## Food records

Men: 50 - 70 g/day

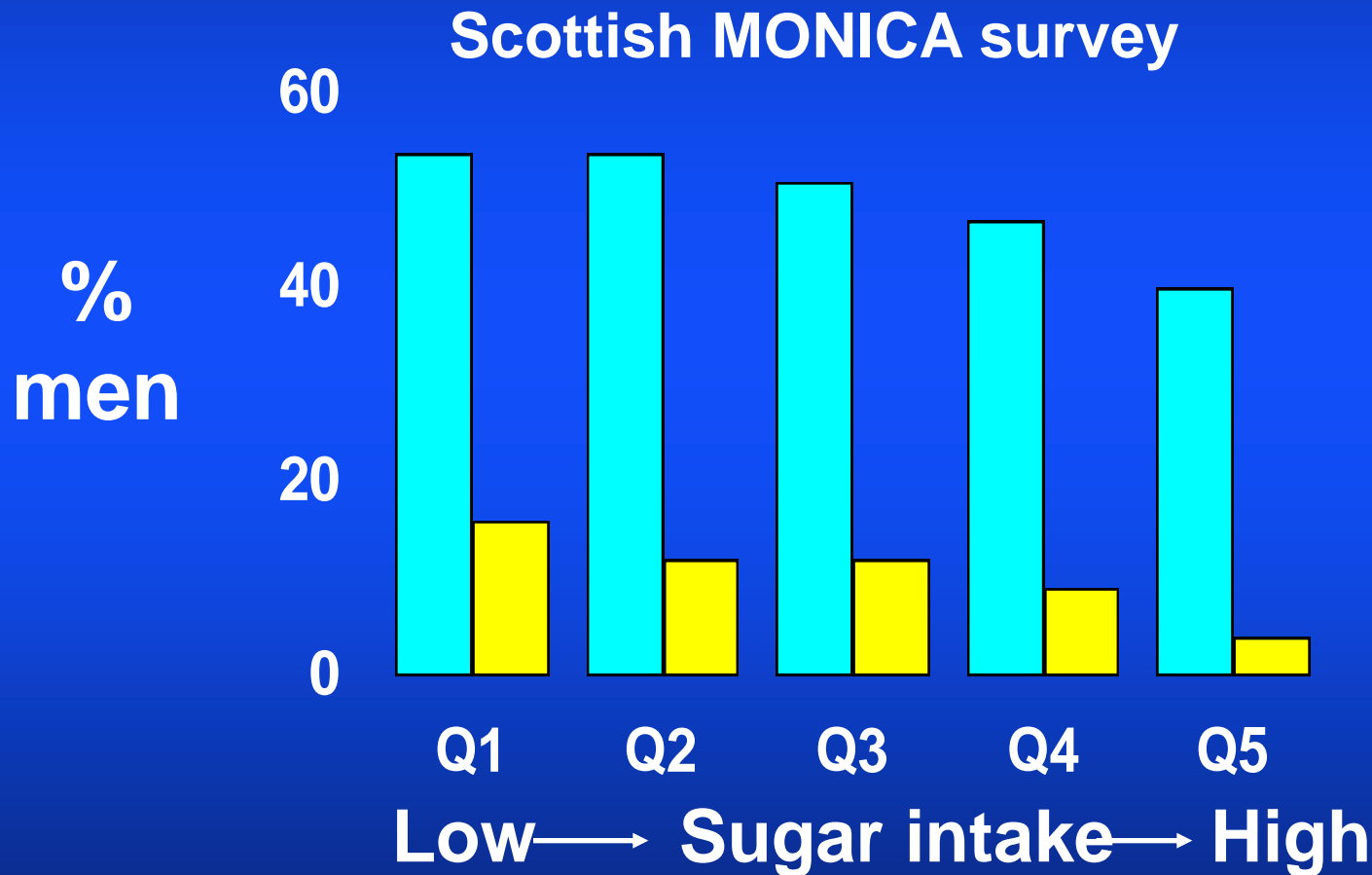
Women: 35 - 50 g/day

Children: 40 - 50 g/day

10-12% of total energy intake, ie within target

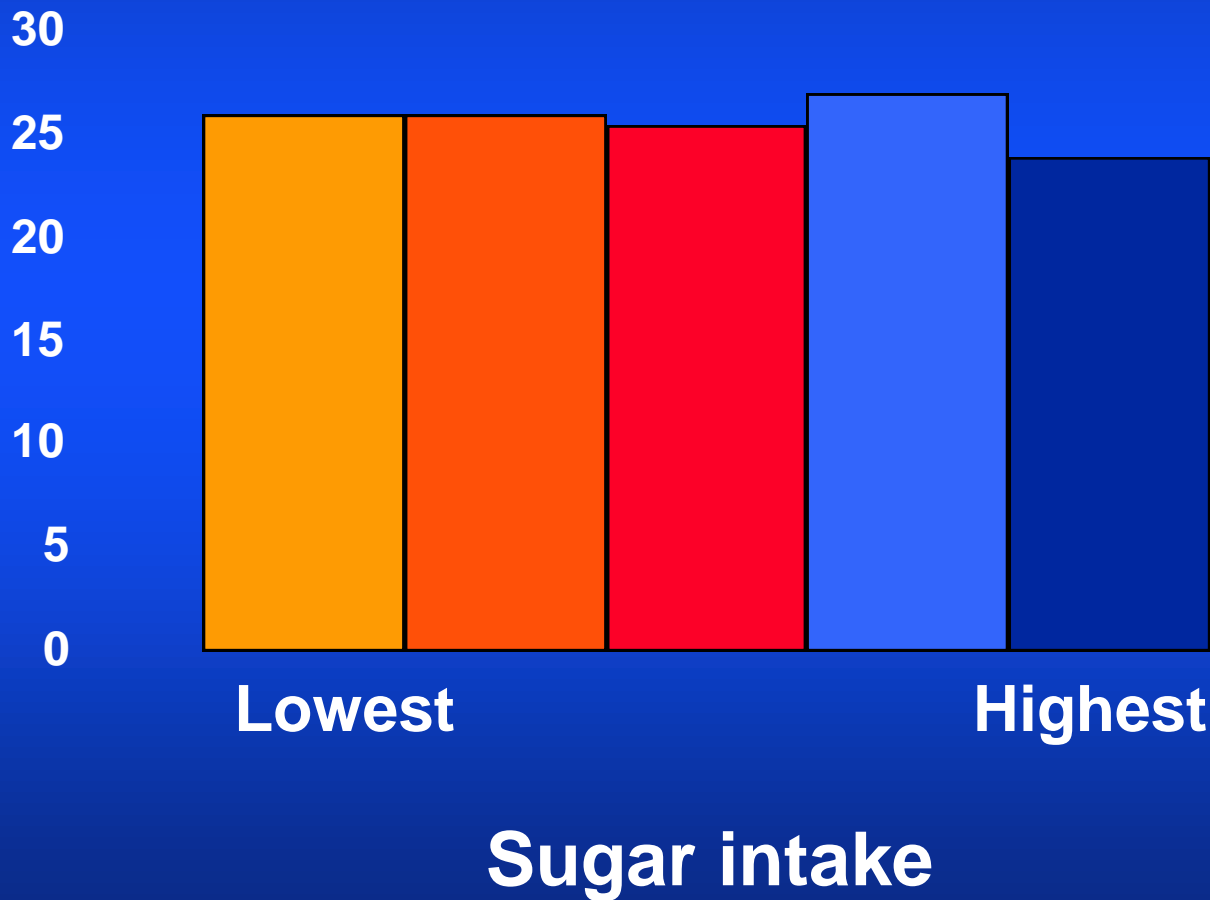
**Sugar makes you fat?**

# High sugar intake is assoc'd with leanness



# Sugar intake and weight status

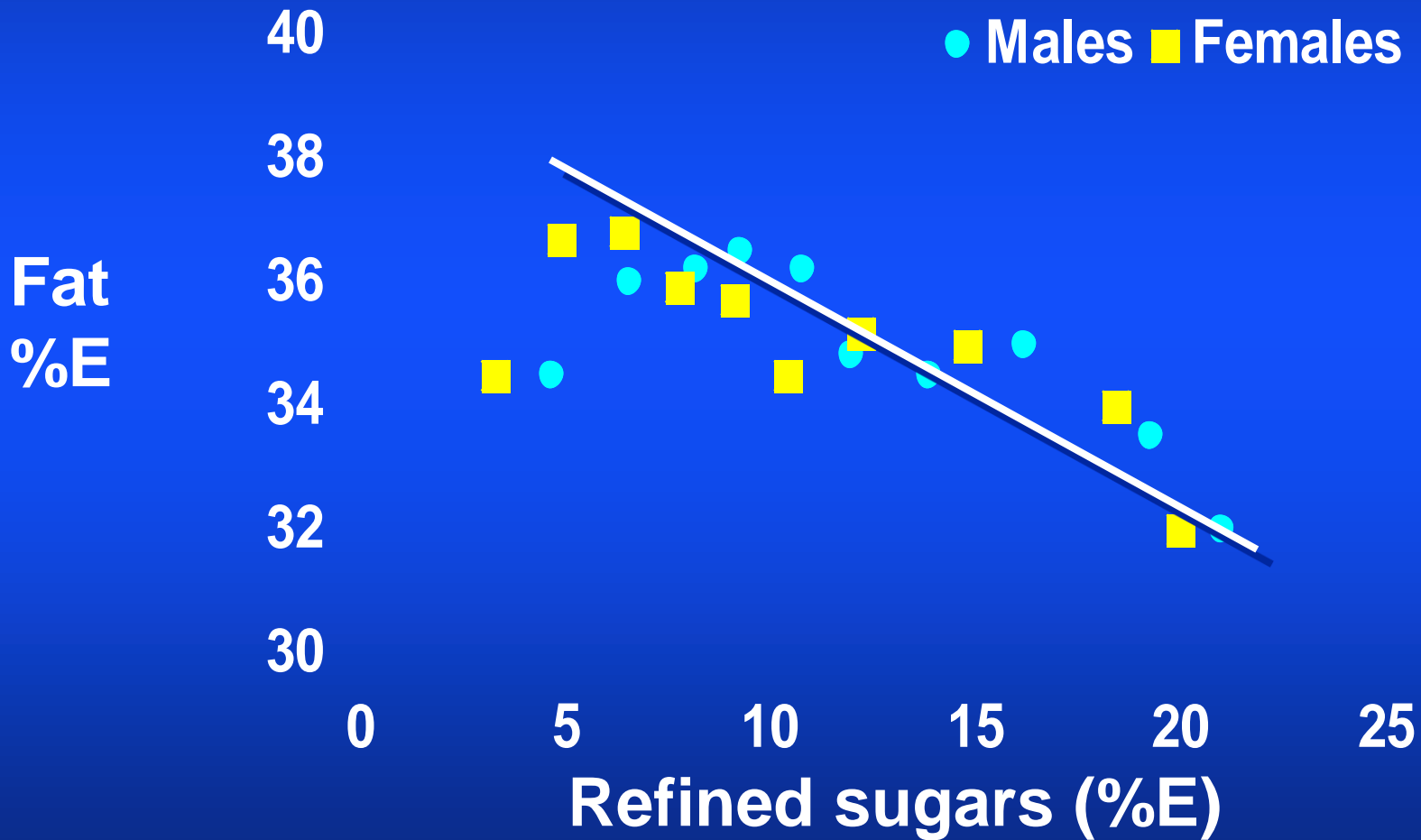
Body mass index of Australian males



**Sugar increases fat  
intake?**

# Sugar-fat seesaw in Aust.

n = 2800 adults



# The implications of the sugar-fat seesaw

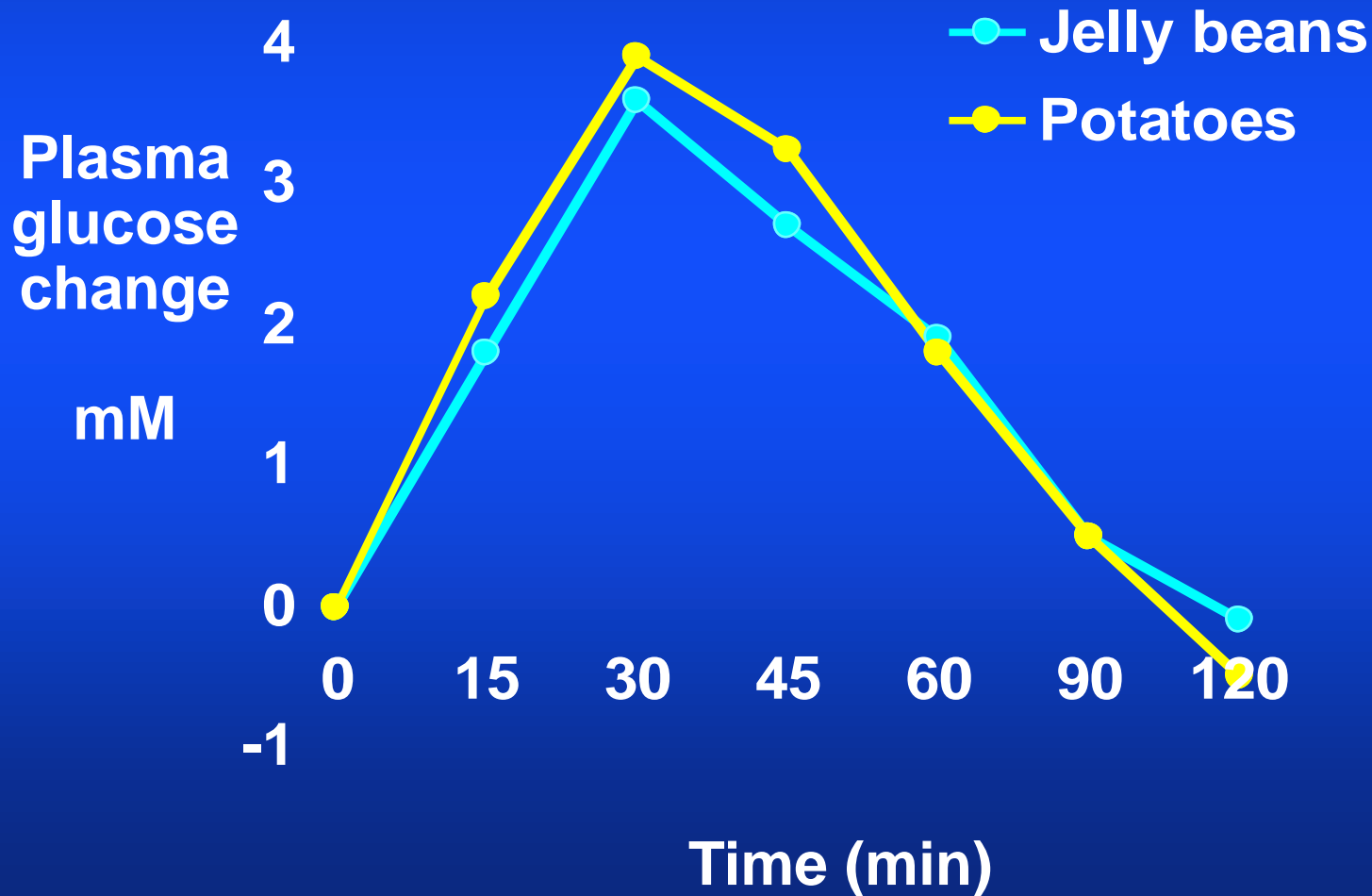
*‘The proportion of individuals achieving dietary guidelines for total and saturated fat is much higher among sub-groups with higher intakes of total sugars.’*



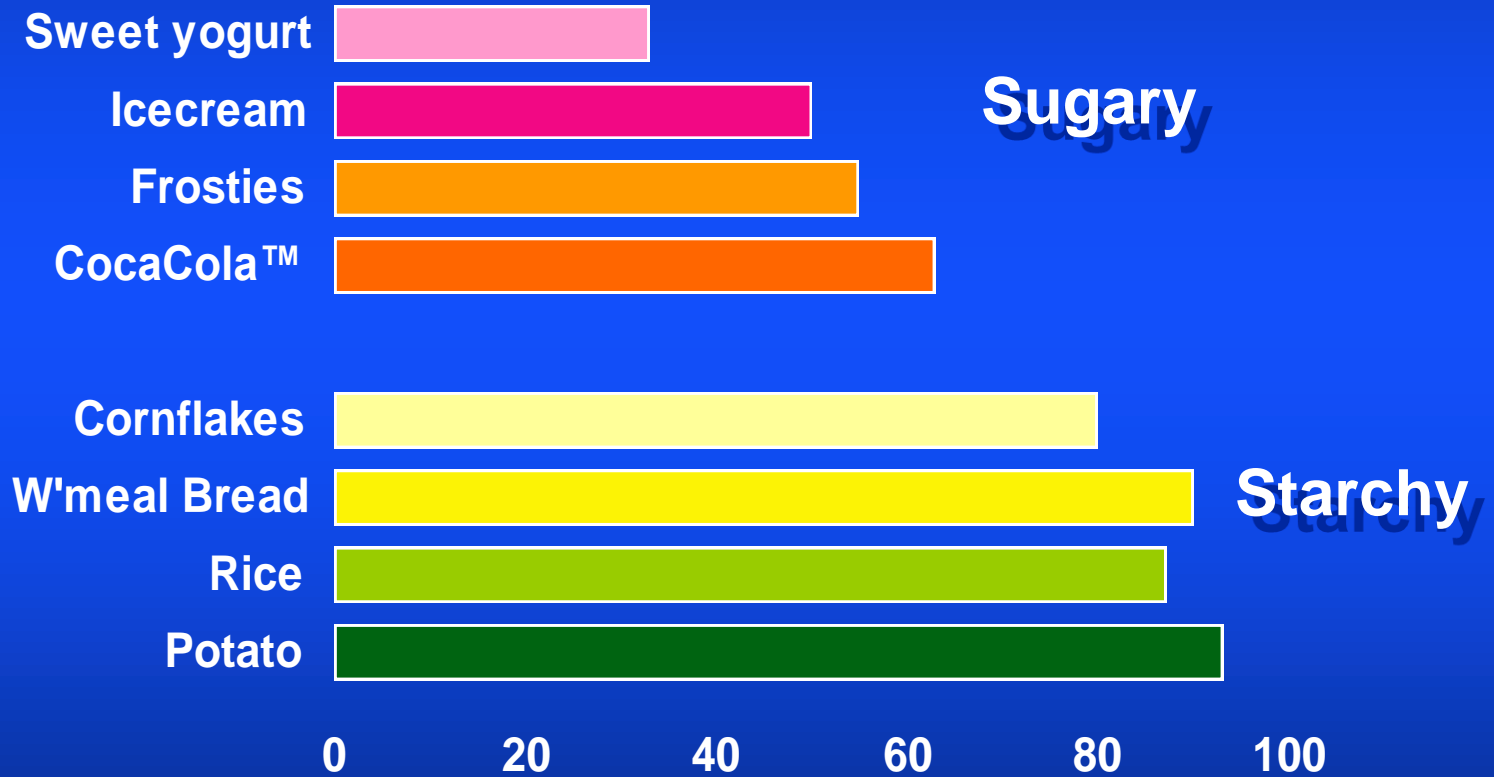
**Sugar makes blood sugars soar?**

# Jelly beans vs potatoes

Blood glucose response to 50 g CHO portions



# GI of sugary vs starchy foods



# Sugar makes blood sugar soar?

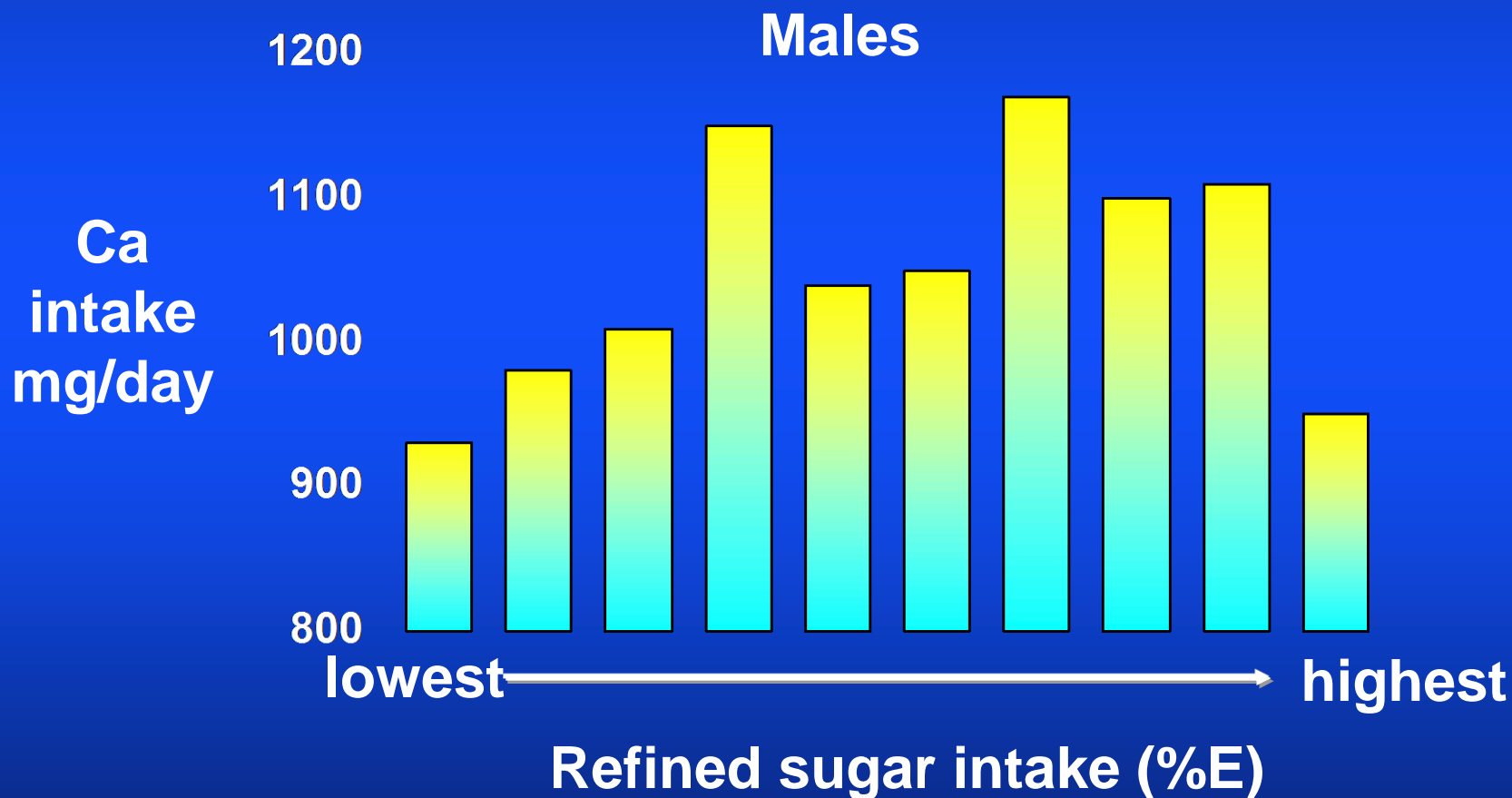
## The scientific facts:-

- Many starchy foods (potatoes, bread, rice) give higher responses than sugar
- Sugary foods produce low-to-moderate rises in blood glucose levels
- We eat twice as much starch as we do sugar
- Diets that are high in sugars tend to have the lower overall 'glycemic index'

**Sugar causes nutrient  
deficiencies?**

# Refined sugars and calcium intake

Australia n = 2800 adults



# Refined sugars and iron intake

Australia n = 2800 adults

14

Females

Iron  
intake  
mg/day

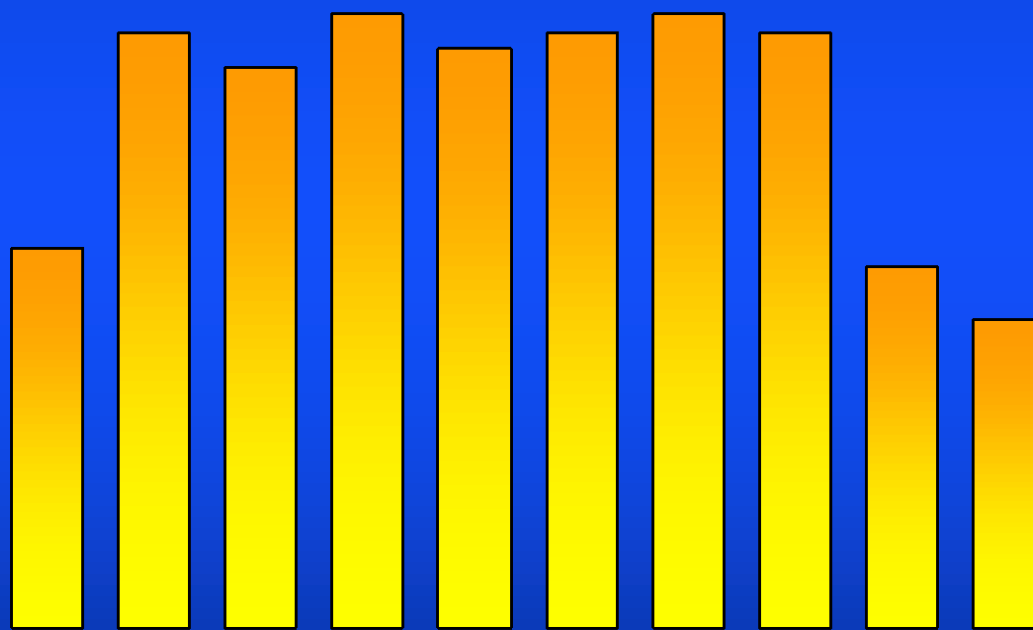
12

10

lowest

highest

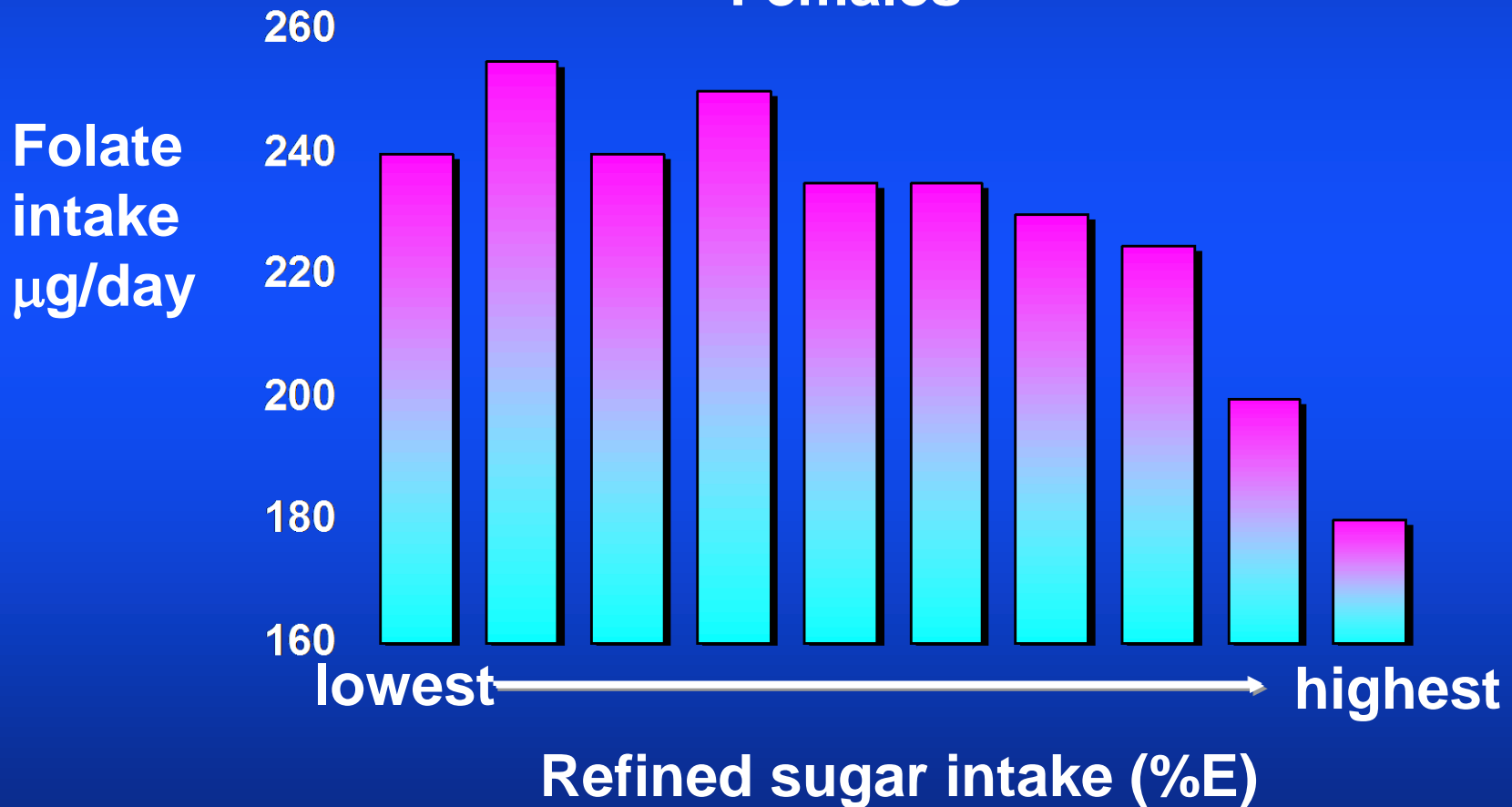
Refined sugar intake (%E)



# Refined sugars and folate intake

Australia n = 2800 adults

Females



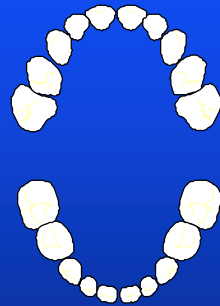


# **Sugar causes nutrient deficiencies?**

**The scientific facts:-**

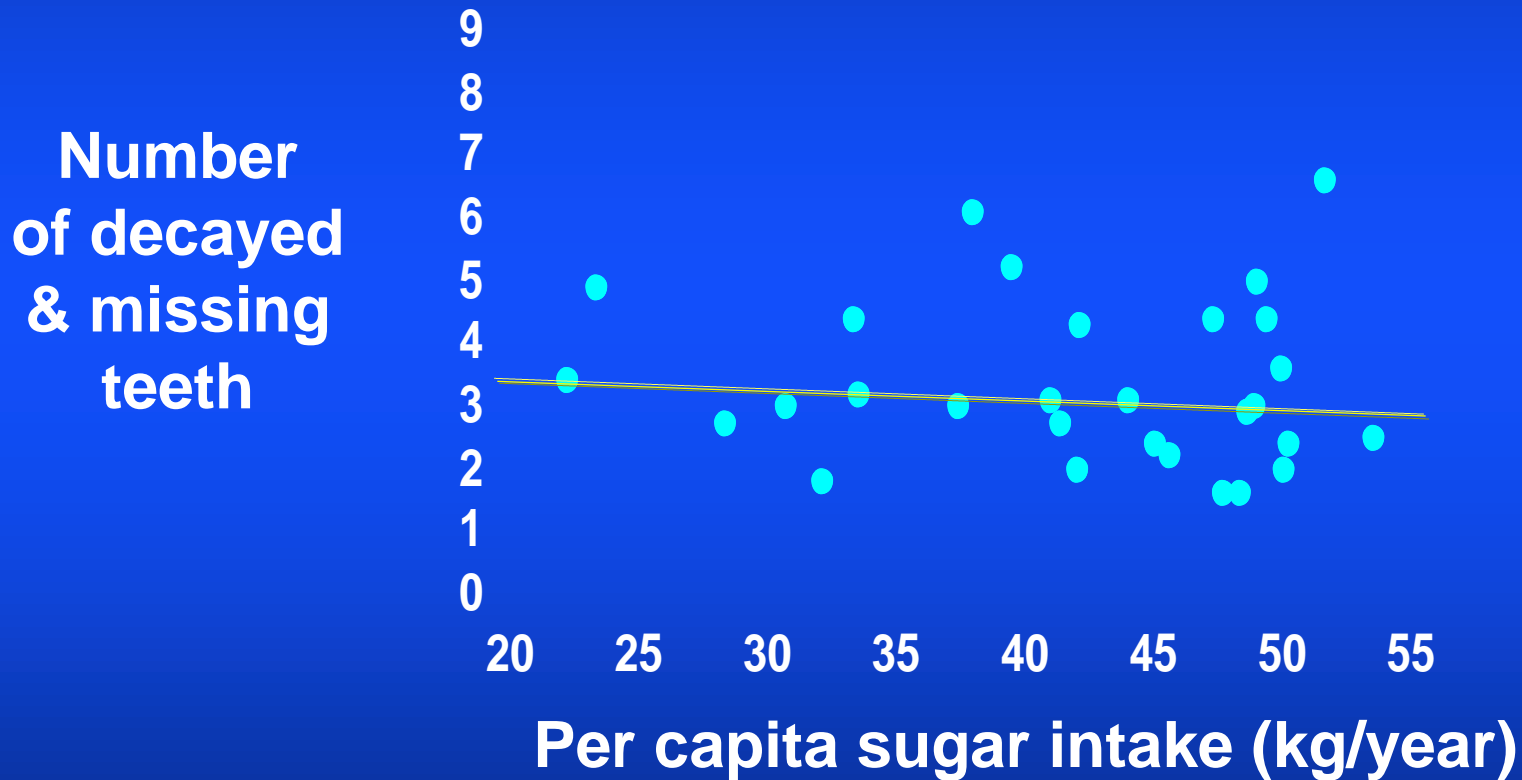
- **Sugar increases the acceptability of nutritious foods**
- **Diets containing moderate amounts of sugars have highest micro-nutrient content**

# Low sugar diets prevent tooth decay?



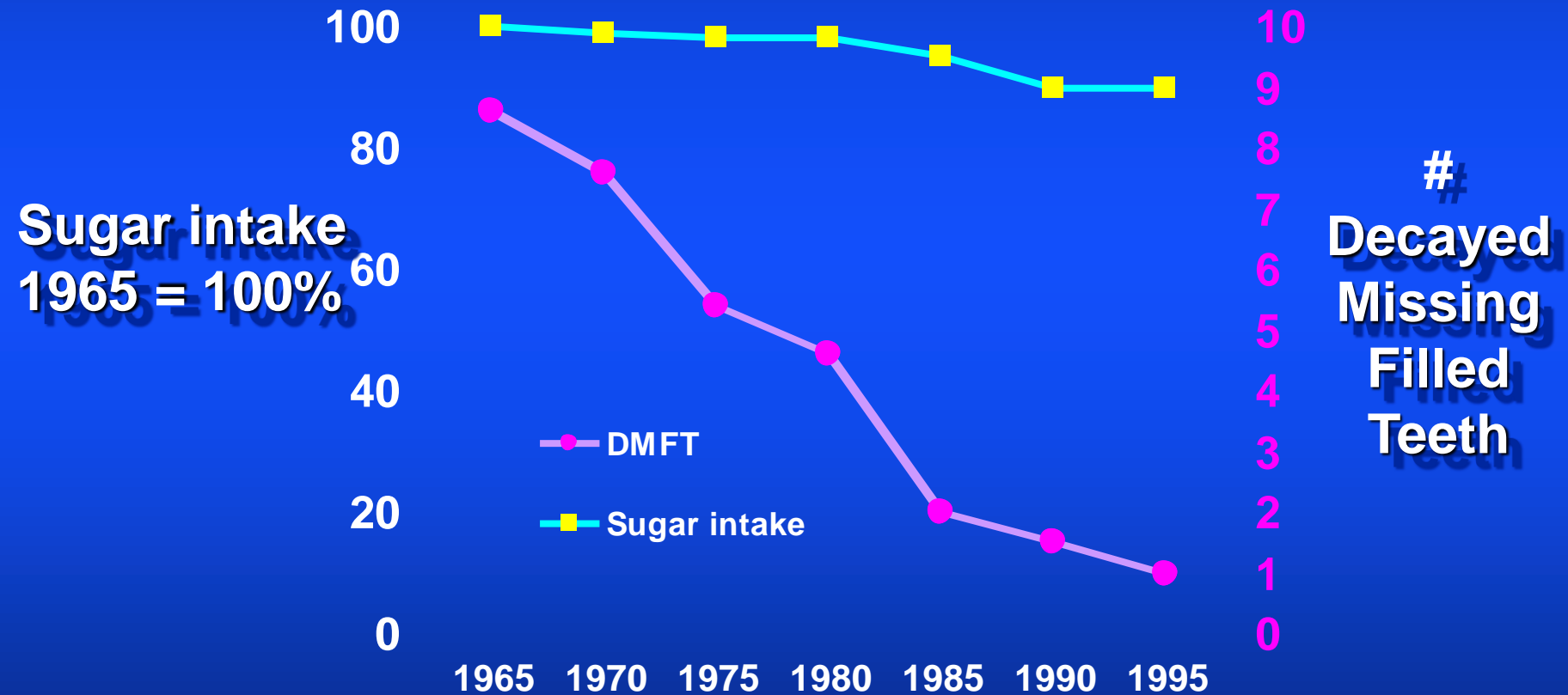
# Sugar and dental caries

No relationship in industrialised countries



# Sugar and dental caries

In Australia, fluoridation began in 1964



Source: Australian Institute of Health and Welfare, Australia's Health 1998

# Low sugar diets prevent tooth decay?

The scientific facts:-

- fluoride in water and toothpaste are 100 times more effective
- all carbohydrates increase tooth decay
- meal frequency is more important
- retention time, stickiness
- tooth brushing should be the main message to help prevent decay

**Restricting sugar may do  
more harm than good**

# **Low sugar diets are associated with:**

- **increased fat intake**
- **increased obesity**
- **increased overall glycemic index**
- **decreased intake of some micronutrients**
- **little impact on dental caries**
- **diversion of dollars and research efforts to non-nutritive sweeteners**

# Take home message (1)

**‘Moderate intake of sugar-rich foods can provide for a palatable and nutritious diet’**

Joint FAO/WHO Expert Consultation on  
Carbohydrates in Human Nutrition, 1998



# Take home message (2)

**‘At the levels normally consumed sugar has no effect on disease risk, apart from dental caries’**

USA Food and Drug Administration, 1986

# Take home message (3)

**‘Total sugar consumption does not show strong concomitant variation with caries experience’**

Australian Institute of Health and Welfare, 1998