New Research on Meat and Alzheimer's Disease

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New evidence suggests that meat in general and unprocessed red meat specifically does not increase the risk of dementia or Alzheimer's disease. This position paper highlights the findings from a recent systematic review and meta-analysis, and other research related to meat, dietary patterns, dementia and Alzheimer's disease. This evidence suggests it makes sense to include red meat, such as beef, as part of healthy balanced diets to support life-long cognitive health.

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ALZHEIMER'S DISEASE FACTS AND RISK FACTORS

Alzheimer's disease is the most common type of dementia

According to the Alzheimer Society of Canada, "Alzheimer's disease is a chronic neurodegenerative disease that destroys brain cells, causing thinking ability and memory to deteriorate over time."[1]

- One in 20 Canadians over age 65 has Alzheimer's disease.[2]
- One in four Canadians over age 85 has Alzheimer's disease.

After the age of 65, the risk of developing Alzheimer's disease doubles about every five years.[2]
The prevalence of dementia is expected to rise as lifespans increase and populations age.[3,4]

There are many risk factors for dementia

Non-modifiable risk factors:[2]

- Age is the strongest known risk factor for dementia.
- Women are more likely to develop Alzheimer's disease than men.
- Genetics can play a role in some, but Alzheimer's usually does not run in families.

Modifiable risk factors:[3]

- Lack of education
- Hearing loss
- Traumatic brain injury
- High blood pressure
- Alcohol misuse
- Obesity
- Smoking
- Depression
- Social isolation
- Physical inactivity
- Air pollution
- Diabetes

Modifiable risk factors are an important target to reduce the rising prevalence of dementia.[3]

RESEARCH CHALLENGES ASSUMPTIONS ABOUT MEAT

2020 Systematic review and meta-analysis

A systematic review and meta-analysis published in 2020 explored the evidence on meat intake and cognitive disorders such as dementia and Alzheimer's disease in older and elderly adults.[5]

The majority of studies in this review (21 of 29) showed:

- **Meat consumption is not associated with cognitive decline or disorders.**

Meta-analyses conducted within this review found:

- No significant difference in meat consumption between participants with cognitive disorders and control subjects.
- Those consuming meat weekly or more were 27% less likely to have cognitive disorders, compared to those consuming meat less frequently.

According to the authors this is the first systematic review to explore associations between meat and cognitive function, dementia, and Alzheimer's disease.

Other recent studies support this conclusion

- 2021 UK study of nearly 500,000 participants found **unprocessed red meat intake is associated with a reduced risk of Alzheimer's disease and all-cause dementia.[6]**
- 2019 French study found **very low meat consumption (≤1 time per week) was associated with an increased risk of Alzheimer's disease and dementia compared to regular intake (≥4X/week).[7]**

DIETARY PATTERNS, DEMENTIA AND ALZHEIMER'S

Exploring the Mediterranean, DASH and MIND diets

Studies have also explored how dietary patterns such as the Mediterranean, DASH and MIND diets may affect cognition or dementia.[5,8,9] A recent review concluded that these three dietary patterns are associated with less cognitive decline and a lower risk of Alzheimer's disease.[8] The strongest associations are for the MIND diet, a blend of the Mediterranean and DASH diets.[8] An earlier review notes the Mediterranean diet is associated with less cognitive decline, and the DASH and MIND diets with slower cognitive decline and a reduced risk of Alzheimer's disease.[9]

DASH stands for Dietary Approaches to Stop Hypertension. MIND stands for Mediterranean-DASH Intervention for Neurodegenerative Delay.

Researchers point out that the Mediterranean and DASH dietary patterns represent broad nutritional profiles.[5] They are characterized by plenty of vegetables, fruits, nuts and seeds, they include whole grains and legumes, as well as fish (with omega-3 fatty acids) and olive oil. Growing evidence indicates combinations of foods and nutrients consumed in dietary patterns may act synergistically to provide stronger health effects than individual dietary components.[9]

Meat intake in Canada is in the range of Mediterranean countries

Contrary to common perception, unprocessed red meat intake in Mediterranean countries and Canada appear comparable based on a global 2022 review published in Lancet Planet Health.[10]

Based on FAO data, total meat intake (including all red meat, poultry, game, and organ meat) falls in the range of countries like Spain and Italy:[11]

Total Meat Intake (kg/capita/year)	
Spain	95.16
Canada	91.70
Italy	85.73
Greece	76.62

Recent worldwide population analysis shows life expectancy is greater when there is more meat in the diet - even in countries with a Mediterranean diet.[11]

Canadians generally eat a moderate amount of red meat

The latest national nutrition survey data show that on average:[12]

- Unprocessed red meat contributes only 5% of Canadians' total energy (calorie) intake.
- Canadians eat a total of 288 grams of cooked unprocessed red meat per week (i.e., less than 3 - 100 gram servings, or about 3 meals per week ~ two dinners and a lunch).

Average Red Meat Intake in Canada	
Unprocessed red meat (g/day)	41.1
Processed red meat (g/day)	19.9
TOTAL g/day	61.0
TOTAL g/week	427

Mediterranean diets focus on whole foods, with plenty of vegetables and fruit, whereas 46% of calories in the Canadian diet come from ultra-processed foods with little nutritional value.[13]

REVISITING ASSUMPTIONS ABOUT RED MEAT

Studies highlight benefits associated with meat

Dementia researchers have suggested that previous assumptions about red meat need to be revisited in light of more recent evidence.[9] For example, they point to a study that found eating meat (i.e., not being vegetarian) was independently associated with better memory function in older adults (68+ years) and with a four-fold decrease in the risk of dementia.[14] They also highlight another study that found both positive and negative associations between red meat intakes and cortical thickness in different brain regions.[14] Higher red meat intake was associated with greater thickness (indicative of less brain atrophy) in the entorhinal cortex,[15] a brain region involved in memory, navigation and the perception of time. They speculate this may be due to nutrients in red meat such as monounsaturated fatty acids, protein, iron and vitamin B_{12}.

Macronutrient balance matters

Researchers have also investigated how calorie intakes and the relative distribution of macronutrients, carbohydrates, fat, and protein, may affect the development of cognitive impairment and dementia. A study of elderly adults revealed that dietary patterns relatively high in calories from carbohydrates and low in calories from fat and proteins are associated with a greater risk of mild cognitive impairment and dementia.[16] In other words, this study found those who consumed the highest percentage of daily calories from carbohydrates were at greater risk of mild cognitive impairment and dementia; whereas, **the risk was reduced in those who consumed the highest percent of calories from fat and protein.**

Studies have also found that higher overall calorie intakes are associated with increased risk of cognitive impairment.[16]

CONCLUSION

It makes sense that healthy dietary patterns emphasizing nutritious whole foods are good for our brains. Canadians eat a moderate amount of unprocessed red meat on average and total meat consumption is in the range of Mediterranean countries like Spain and Italy. Current research supports including meat as part of healthy balanced diets for life-long cognitive health.

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