



A Mediterranean Dietary Pattern for Haemochromatosis: is this a good idea?

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Dietary approaches to promote health


- There is no difference in the recommended general eating pattern for those with or without haemochromatosis; **there some choices that may be better for those with haemochromatosis** (Moretti et al., 2013)
- General healthy diet with some sensible, evidence-based 'tweaking'
- Preventing chronic diseases associated with ageing
- Changing from a 'reductionist' to a more holistic dietary approach; remember lifestyle aspects
- But what is a good overall general diet?
- Is it our Australian Dietary Guidelines? Is it the Mediterranean Diet? Is it an anti-inflammatory diet? Can we ever determine this?

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Does changing diet help?

- **Certainly**, in general – for achieving a healthy life and preventing chronic disease
- **Yes** with iron overload – depending on specific genetic mutation
 - Effects seen faster with homozygous mutation
 - Effects seen slower with heterozygous mutation and those mutations not associated with "probably no increased risk" of iron overload



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Risk of Iron Overload

Genetic test result	Explanation	Risk of iron overload	How many Caucasian Australians have this genotype?
Homozygous C282Y	2 copies of the C282Y mutation	Greatly increased risk	1 in 200
Compound heterozygous C282Y/H63D	1 copy of C282Y mutation and 1 copy of H63D mutation	Increased risk	1 in 50
Homozygous H63D	2 copies of H63D mutation	Very slightly increased risk	1 in 100
Heterozygous H63D	1 copy of H63D mutation and one normal gene	Probably no increased risk	1 in 5
Heterozygous C282Y	1 copy of C282Y mutation and one normal gene	Probably no increased risk	1 in 9
Normal genotype	No mutations detected	No increased risk	2 in 3

For a more detailed explanation of the the possible genetic test results, see our [Information Sheet 1: Genetic test results and haemochromatosis Mutations: What is your genotype?](#)


Reference: <http://haemochromatosis.org.au/genetics/>

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Why are holistic guidelines important?

- Need to consider entire lifestyle in our treatments – why?
- Need to help people to maintain a healthy weight and move more – across a range of chronic conditions to prevent development of other conditions



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Mediterranean diet: What is it?



"Mediterranean diets are not a single dietary pattern, but they do have common features — an emphasis on vegetables, fruits, beans, nuts, seeds, breads, unrefined grains, and olive oil (but not necessarily extra-virgin olive oil); inclusion of fish and wine; and minimal intake of meats and full-fat dairy products. Such diets are rich in total, monounsaturated, and polyunsaturated fat and are lower in saturated fat".

Appel, LJ & Van Horn, L. (2013). N Engl J Med 2013; 368:1353-1354

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The “Mediterranean” Diet


- Early research in the 1940’s – 1960’s by Ancel Keys – the 7 countries study - started giving some clues
 - <http://sevencountriesstudy.com>
- United States, Japan, Italy, Greece, the Netherlands, Finland, and then-Yugoslavia
- Investigated nearly 13,000 middle aged **men** for associations among diet, risk and disease
- Better outcomes linked to postwar “poor” diet, which emphasised fruits, vegetables, grains, beans, and fish

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Mediterranean Diet Pyramid: a lifestyle for today

Setting the Standard for Healthy Living for ALL Australians



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The healthiest male



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“Low-coronary-risk male, Isle of Crete”

He is a shepherd or small farmer, a beekeeper or fisherman, or a tender of olives or vines. He walks to work daily and labors in the soft light of his Greek isle, amidst the droning of crickets and the bray of distant donkeys, in the peace of his land. ... His midday, main meal is of eggplant, with large livery mushrooms, crisp vegetables, and country bread dipped in the nectar that is golden Cretan olive oil. Once a week there is a bit of lamb, naturally spiced from grazing in thyme-filled pastures. Once a week there is chicken. Twice a week there is fish fresh from the sea. Other meals are hot dishes of legumes seasoned with meats and condiments. The main dish is followed by a tangy salad, then by dates, Turkish sweets, nuts, or succulent fresh fruits. A sharp local wine completes this varied and savory cuisine. This living pattern, repeated six days a week, is climaxed by a happy Saturday evening. The ritual family dinner is followed by relaxing fellowship with peers. Festivity builds to a passionate midnight dance under the brilliant moon in the field circle where the grain of the region is winnowed... His is the lowest heart-attack risk, the lowest death rate, and the greatest life expectancy in the Western world.

–Keys research team

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Latest evidence



Annu Rev Nutr. 2015;35:425-49. doi: 10.1146/annurev-nutr-011215-025104

Mediterranean Dietary Patterns and Cardiovascular Health.
Shen et al.

Abstract
The Mediterranean dietary pattern has been linked with reduced cardiovascular disease incidence and mortality. Components of the Mediterranean diet associated with better cardiovascular health include **low consumption of meat and meat products, moderate consumption of ethanol (mostly from wine), and high consumption of vegetables, fruits, nuts, legumes, fish, and olive oil.** Increasing evidence indicates that the synergy among these components results in **beneficial changes in intermediate pathways of cardiometabolic risk, such as lipids, insulin sensitivity, oxidative stress, inflammation, and vasoreactivity.** As a result, consumption of a Mediterranean dietary pattern favorably affects numerous cardiovascular disease risk factors, such as **dyslipidemia, hypertension, metabolic syndrome, and diabetes.** Moreover, strong evidence links this dietary pattern with reduced cardiovascular disease incidence, recurrence, and mortality. This review evaluates the current evidence behind the cardioprotective effects of a Mediterranean dietary pattern.

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Reminder: two types of iron

- **Haem iron** – in meat – very well absorbed
 - Absorption impaired by tea (tannins), dairy products, phytates (nuts/seeds/brans) consumed at the same time (competes for absorption).
- **Non-haem iron** – in vegetables, cereals, grains, supplements, fortified products, e.g. cereals – not well absorbed
 - Assisted by Vitamin C, acidic foods, or consuming meat with vegetables, cereal
 - Absorption impaired by tea (tannins), dairy products (calcium), nuts/seeds/bran (phytates), consumed at the same time (competes for absorption)

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How can we apply this dietary pattern in HC?

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Applications of Mediterranean Dietary pattern for HC

- **Veg – greens** (rich in non-haem iron) have oxalates, and other important nutrients, e.g. folate; do not consume with Vitamin C (e.g. orange juice) or meat, e.g. have in a vegetarian dish or as a salad away from the main meal
- **Fruit** – eat away from main meals so iron absorption is not increased (Vitamin C) – eat as snacks on its own
- **Bread** – wholegrain is healthier and may contain more iron, but also contains phytates which inhibit iron absorption, so it is just as 'okay' iron-wise as white bread – you can eat fibrous foods!! – important with excess iron too

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Applications of Mediterranean Dietary pattern for HC

- **Meat, and meat products, chicken, fish, eggs**
 - **Red meat** is de-emphasised in the MedDiet pattern – (<2 serves per week); a serve is around 65g or ¼ the size of a deck of cards (cooked) based on the new Australian dietary guidelines.
 - Have a steak sandwich on wholegrain bread - some of the phytates in the bread will impair the absorption of the iron
 - Particularly avoid organ meats (very rich in iron).
 - **White meat** - 2 serves per week. White meat, particularly chicken, is low in iron
 - **Fish** - ensure it is good quality fish and fatty fish - e.g. salmon, mackerel, herring - rich in omega-3 fatty acids important for a range of health factors - eyes, brain, joints, well-being - at least 2 serves/week; make sure fish is cooked - not raw

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Applications of Mediterranean Dietary pattern for HC

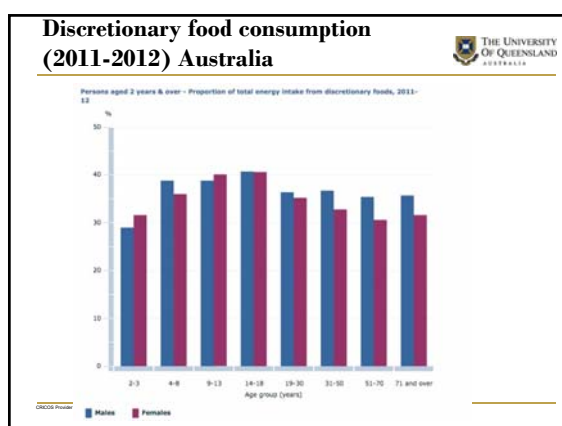
- **Alternatives to meat: Legumes** - peas, beans, lentils - excellent sources of protein, vitamins and minerals (esp calcium), but also phytates. Keep the variety up. At least >2 serves of legumes weekly; I would recommend daily.
- **Eggs:** can have every day if you want to! Iron poorly absorbed; great for protein
- **Nuts/seeds:** rich in good fats, protein, vitamins, minerals (esp calcium) but also phytates, 1-2 serves per day - about a handful each time
- **Tea:** rich in tannins - the stronger the better - assist with reducing iron absorption; adding milk is fine
- **Alcohol:** MedDiet levels not recommended; limit as much as possible due to the added strain on the liver


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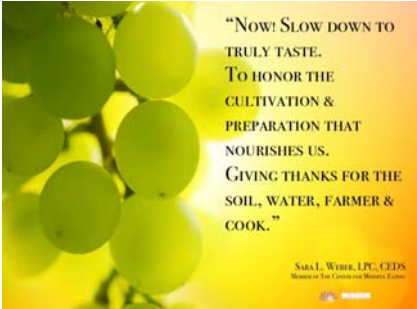
Applications of Mediterranean Dietary pattern for HC

- **Discretionary foods, or sweeties, or choccies, or ...**
- Should be less than or equal to 2 times per week (MedDiet)
- This is a national issue for EVERYONE

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Tips for managing discretionary foods 



“NOW! SLOW DOWN TO TRULY TASTE. TO HONOR THE CULTIVATION & PREPARATION THAT NOURISHES US. GIVING THANKS FOR THE SOIL, WATER, FARMER & COOK.”

SARA L. WHEAT, LPC, CEDS
Ministry of Food, Culture and Heritage, Essex

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Summary for good health and MedDiet pattern with iron in mind 

INCREASE

Everyday

- Legumes*
- Wholegrain foods*
- Nuts/seeds*
- Dairy foods*
- Tea*
- Vegetables (5s)*
- Fruit (2s) - away from main meals
- Olive oil (with proper use), canola oil, rice bran oil (high temp frying)
*particularly with meals containing iron

Every other day

- Fatty fish - at least 2s/week
- White meat - 2-4s/week

DECREASE

- Vitamin/mineral supplements containing iron and VitC
- Iron-fortified foods & drinks
- Meat, particularly red
- Vitamin C sources with meals
- Juices
- Vinegar
- Butter, cream
- Soft drinks
- Pastries, cakes, biscuits
- Refined carbohydrates – white breads, cereals, baked goods, sweets
- Takeaway and fast foods
- Alcohol (for liver protection)
- Raw seafood (*Vibrio vulnificus*)

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Also remember... 

- Achieve regular physical activity - min. 30 mins per day
- Achieve adequate rest and sleep - so important
- Aim to eat in company for companionship and fun
- Aim to buy seasonal products
- Think about the benefits of traditional, local and eco-friendly products
- **Enjoy your food**

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References 

Moretti, D., van Doorn, G.M., Swinkels, D.W., Melse-Boonstra, A. (2013). Relevance of dietary iron intake and bioavailability in the management of HFE hemochromatosis: a systematic review. *Am J Clin Nutr*, 98:468-79.

Shen, J., Wilmot, K.A., Molloy, D.L., Burkman, G., Mekonnen, G et al. (2015). Mediterranean Dietary Patterns and Cardiovascular Health. *Annu Rev Nutr*, 35:425-49.

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Thank you & questions 



The Conference Pears made many fruitless attempts to send and receive e-mails on their new Blackberries...

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