Dr Michael Mosley (*Trust Me, I'm a Doctor*) instigated a trial to determine the impact of coconut oil on cardio-vascular health.

94 participants were randomly assigned to one of three groups. They were asked to consume an additional 50g of fat – either coconut oil, butter or olive oil, daily for a period of four weeks. [1]

The main measure was the change in total cholesterol.

Below is Mosley's conclusion.

> Dr Mosley says that, as predicted, the LDL levels of butter eaters increased by about 10 per cent on average while their good cholesterol, HDL, rose by around five per cent. The volunteers who downed olive oil saw a non-significant reduction in LDL cholesterol and a five per cent rise in good cholesterol. Meanwhile, the people in the controversial coconut oil group experienced – on average – no increase in LDL levels. Instead, there was a 15 per cent rise in their LDL cholesterol. [2]

Note that the emphasis is on the amount of change rather than the more important absolute values.

Below are results relating to cholesterol and diabetes indicators at the start of the four-week trial.

Baseline values	**Coconut oil Mean**	**Butter Mean**	**Olive Oil Mean**
LDL-cholesterol (mmol/L)	3.5	3.5	3.7
Total cholesterol (mmol/L)	5.9	5.9	6.0
Glucose (mmol/L)	5.3	5.4	5.4
Systolic blood pressure (mm Hg)	131.4	136.5	133.1

Below of the results at the end of the four-week trial.

Results at 4 weeks	**Change from baseline**			**Average Difference (1st value – 2nd value)**		
	Coconut oil Mean	Butter Mean	Olive oil Mean	Coconut vs Olive	Butter vs Coconut	Butter vs Olive

Results at 4 weeks	Change from baseline			Average Difference (1st value – 2nd value)		
LDL-cholesterol (mmol/L)	-0.09	0.33	-0.06	-0.04	0.42	0.38
Total cholesterol (mmol/L)	0.22	0.42	0.03	0.19	0.19	0.38
Glucose (mmol/L)	-0.05	0.02	-0.06	0.01	0.08	0.09
Systolic blood pressure (mm Hg)	0.18	-3.79	-3.67	3.91	-3.22	0.69

- Adding 50g of fat to a diet an already high-fat diet is not a healthy dietary modification.
- All diets were 36-37% fat (by energy) which is higher than the US average of 33%.
- The average total cholesterol for all diets at the start of the trial was 5.9-6.0 – which is very high. The cholesterol was high at the start of the trial and was still very high at the end. Optimal values are less than 4.0 mmol/L. This is NOT a healthy outcome.
- The average LDL cholesterol for all diets at the start of the trial was 3.5-3.7 – which is very high. The LDL cholesterol was high at the start of the trial and was still very high at the end. Optimal values are less than 1.8 mmol/L.
- Average cholesterol was increased 7.1% for butter, 3.7% for coconut oil and 0.05% for olive oil. None of the three decreased the levels of cholesterol.
- The baseline values for fasting glucose was 5.3-5.4 mmol/L. A reasonable desirable level is 3.9-5.0 mmol/L. After 4 weeks, the fasting glucose decreased an average of 0.05 mmol/L for coconut oil and 0.06 mmol/L for olive oil. It was raised 0.02 mmol/L for butter. These changes are not beneficial.
- Systolic blood pressure is also high. Optimal systolic blood pressure is less than 120. Coconut oil had a greater tendency to raise the systolic blood pressure compared to butter and olive oil.
- Not all authorities agree that HDL cholesterol is a valid indicator of cardio-vascular health. The fact that coconut oil raised HDL cholesterol is not relevant to better health outcomes. Professor William Roberts is an esteemed cardiovascular pathologist. He is the current editor (at 2018) of the *American Journal of Cardiology* — a position he has held since 1982. He states that HDL cholesterol is largely irrelevant despite the importance placed on it by many health organisations. [3] [4]

A change in cholesterol is not the only impact that a high-fat diet and high saturated fat diet has on health. High-fat diets have a multitude of adverse health outcomes.

A single high-fat meal has a significant impact on endothelial function which takes several hours to recover – just in time for your next high-fat meal. This impacts arterial elasticity and blood flow [5] as well as increasing inflammation. [6]

Another study concluded, "that even a single high-fat meal may be associated with heightened cardiovascular reactivity to stress". [7] The fluidity of the cell membranes is decreased and the permeability is increased with an increase of saturated fats, as well as increasing the viscosity of the blood and increasing the adhesiveness of blood cells. Having blood components sticking together and sticking to blood arteries is not conducive to good health.

The conclusion of Mosley's paper stated, "these findings do not alter current dietary recommendations to reduce saturated fat intake in general but highlight the need for further elucidation of the more nuanced relationships between different dietary fats and health."

Given the lack of any health benefits in the three diets examined, it is difficult to conclude that a "more nuanced" approach will result in a better understanding of the relationships between dietary fats and health.

A number of researchers studied the relationship of saturated fat to serum cholesterol during the 1950s. J Groen, LW Kinsell, EH Ahrens, A Keys, JM Beveridge and B Bronte-Stewart replaced saturated fats in the diet with polyunsaturated fats. All other components of the diet remained the same and the total fat content of the diet did not change.

When the unsaturated fats, such as corn or safflower oil, were replaced by the saturated fats of butter, lard, or coconut oil, the serum cholesterol rose. The serum cholesterol fell when the polyunsaturated fats were reintroduced. The experiments were repeated, and whilst there was variability with the amount of change for different individuals, the results were consistent for each individual. The changes occurred rapidly within one or two weeks.

Unfortunately, Dr Michael Mosley (*Trust Me, I'm a Doctor*) used the results of this study to

conclude that “coconut oil may be good for you”.

> An alternative view is that the three high-fat, unhealthy diets have a similar unhealthy impact on, not only cardio-vascular health, but overall health.

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Footnotes

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3. Roberts, W. C. (2010) It’s the cholesterol, stupid! *American Journal of Cardiology*. 106 (9), 57–73.
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