

# Mothers' high-fat diet affects clotting response in sons, mice study finds

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Mothers who follow a high fat diet may be affecting the cardiovascular health of their sons, according to a new study in mice.

In a paper published in *Scientific Reports*, a team of scientists found that the male children of mice mothers who were fed on a [high fat diet](#) during pregnancy had unhealthy platelets, which are responsible for clotting, when fed on a high fat diet themselves.

Although both male and female children of the mothers fed on a high fat diet showed a variety of risks associated with [cardiovascular disease](#), it was only the platelets of male mice which were considered hyperactive. These platelets were larger, more volatile and showed signs of stress compared to offspring fed on a normal diet.

Dr. Dyan Selayah, lecturer in cellular and organismal metabolism at the University of Reading said:

"Heart disease is one of the UK's biggest killers and mounting evidence suggests that the risk of developing it may be increased during [early development](#), particularly during the gestation period where mothers have a [high-fat diet](#)/are obese. The underlying mechanisms by which an unhealthy maternal diet may impact [heart disease](#) risk remains largely unknown.

"This study used a mouse model of maternal obesity to understand how specialist blood cells known as platelets may be programmed during pregnancy. Platelets are important for blood clotting but are also the cause of heart attacks and strokes if they are activated at the wrong time and place."

Children of the mothers fed on a high fat diet who followed a control diet however did not show the same concerning heart disease risks.

The offspring from the group given a control diet had very similar levels of fat mass, cholesterol and other markers of cardiovascular health as the children of mothers fed a standard diet.

In addition, where [mothers](#) had been fed a standard diet and their offspring fed a high fat diet, those children had higher levels of fat mass and other cardiovascular markers, but their platelets were statistically similar to the other groups apart from where both mum and child were fed high fat diet.

Dr. Craig Hughes, lecturer in cardiovascular biology at the University of Reading said:

"This study revealed that maternal obesity during pregnancy causes offspring platelets to become hyperactive in response to a high-fat diet in adulthood. These results raise the possibility that the risk of unwanted blood clotting (aka thrombosis) in adulthood could be altered during pregnancy by [diet](#) of the mother.

"The specific mechanisms for why high fat diets affect male offspring are still being investigated but we can see that there's likely to be a double-hit where both mums and sons diets together were required to see these bigger, more hyperactive platelets."

**More information:** Renato S. Gaspar et al, Maternal and offspring high-fat diet leads to platelet hyperactivation in male mice offspring, *Scientific Reports* (2021). [DOI: 10.1038/s41598-020-80373-3](https://doi.org/10.1038/s41598-020-80373-3)

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