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The role of dietary acid load and mild metabolic acidosis in insulin resistance in humans.

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Type 2 diabetes is increasingly being recognised as a global health crisis (World Health Organisation). Insulin resistance is closely associated with obesity and precedes the development of type 2 diabetes. However, there is now increasing evidence to suggest that diet itself may independently be associated with type 2 diabetes risk. A diet with a high acid load (or high potential renal net acid load, PRAL) can result in a decrease in pH towards the lower end of the normal physiological range, which may in turn lead to the development of insulin resistance. Conversely, reducing dietary acid load (the so called 'alkaline diet') may be protective and prevent the onset of type 2 diabetes. Here, we explore the influence of dietary acid load on the development of mild metabolic acidosis and induction of insulin resistance. Whilst large prospective cohort studies link high dietary acid load or low serum bicarbonate with the development of type 2 diabetes, the effect of a diet with a low acid (or high alkaline) load remains unclear. Further interventional studies are required to investigate the influence of dietary composition on the body's acid/base balance, insulin resistance and incidence of type 2 diabetes.