



## How a glass of wine affects diabetes



### Introduction

Diabetes mellitus is a set of related diseases in which the body cannot regulate the amount of sugar (specifically, glucose) in the blood. In a healthy person, the blood glucose level is regulated by several hormones, including insulin. Insulin is produced by the pancreas and allows glucose to move from the blood into liver, muscle, and fat cells, where it is used for fuel. In diabetes, glucose cannot move from the blood into cells and so it stays and accumulates in the blood (hyperglycaemia).

High blood glucose levels not only damage the cells that need the glucose for fuel, but also damage organs and tissues exposed to the high glucose levels, such as the retina of the eye, the kidneys, the nerves

and the blood vessels. For example, diabetes promotes the development of atherosclerosis, which is the build-up of fat deposits inside the arteries, which can narrow and block the artery or lead to formation of a blood clot, which increases the risk of a heart attack or stroke. Diabetes also promotes high blood pressure and high blood fat levels (cholesterol and triglycerides), which also increase the risk of a heart attack or stroke.

People with diabetes either do not produce any or enough insulin (type 1 diabetes) to regulate their blood glucose level or cannot use insulin properly (type 2 diabetes). In type 2 diabetes, although the pancreas secretes insulin, the body is partially or completely unable to use the insulin (insulin resistance), and tries to overcome this resistance by secreting more and more insulin.



## Did you know?

About 917,000 Australians (5.4% of the population) had been diagnosed with diabetes in 2011/12 (ABS 2013).

Diabetes is the sixth highest cause of death by disease in Australia.

People with diabetes are almost three times more likely to have high blood pressure, be overweight or have elevated blood fats, such as cholesterol and triglycerides.

People with diabetes are two to three times more likely to have cardiovascular disease, such as heart diseases and disorders.

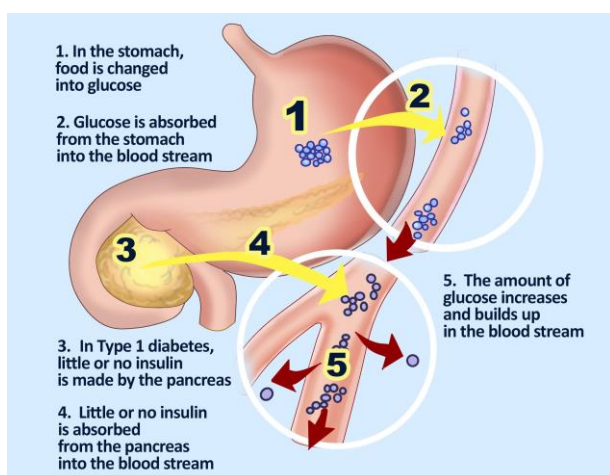


Figure 1. Changes to the pancreas in Type 1 Diabetes

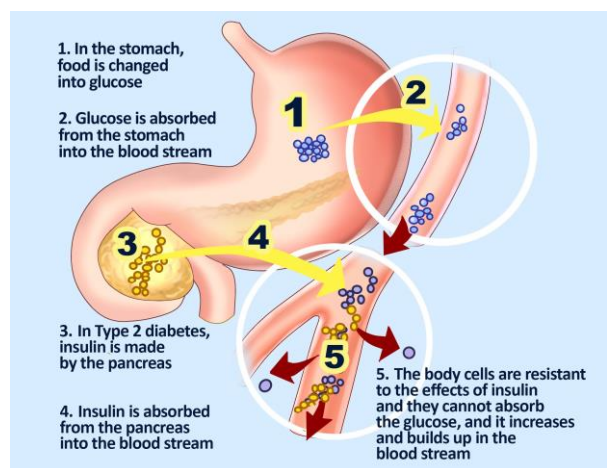


Figure 2. Changes to the pancreas & body cells in Type 2 Diabetes

## How a glass of wine affects diabetes

There appears to be a j-shaped relationship between the amount of wine consumed and the risk of developing insulin sensitivity for type 2 diabetes in adult men and women (Facchini et al. 1994, Kiechl et al. 1996, Lazarus et al. 1997, Dixon et al. 2002). This means that drinking a light to moderate amount of wine may reduce your risk of developing type 2 diabetes but drinking a heavy or excessive amount may increase your risk.

If you are already a diabetic, it appears that regularly drinking a light to moderate amount of wine with a meal might also reduce the risk of developing cardiovascular disease. This is also a j-shaped relationship.

The reduction in risk is related to the positive effect of alcohol from wine on the body's metabolism of glucose and insulin, and on the blood concentration of high density lipoprotein (HDL or the 'good cholesterol'), which increases the removal of 'bad' cholesterol from your body. Drinking a heavy or excessive amount of wine, however, will worsen the effects of diabetes, such as significantly increasing the fasting blood concentration of fats, such as triglycerides, and will also increase the risk of damage to nerve and eye tissue (diabetic neuropathy and retinopathy).

If you are a diabetic who wishes to consume wine, it is better to drink wine with a carbohydrate food or a meal. Drinking wine without a meal can cause your blood sugar level to fall unexpectedly (hypoglycaemia), in particular, if you are an insulin- or medication-dependent diabetic. For example, normally when your blood sugar level starts to drop your liver begins changing stored carbohydrate into glucose, which is then released into the blood stream to stop or slow the drop. When you consume wine, however,



the liver breaks down the alcohol contained in the wine so it can be removed from the body in preference to changing the carbohydrate into glucose. The liver will not begin releasing glucose until all of the alcohol is broken down.

In addition, if you drink more than a light to moderate amount of wine, the alcohol contained in wine can react with many of the prescribed diabetic medications, and worsen the side effects of diabetes, such as increasing blood pressure.

Therefore, you should only drink wine at or below the National Health and Medical Research Council's (NH&MRC) recommendations of a maximum of two 10 g standard drinks per day for men and one 10 g standard drink per day for women.

Certain wine styles and types contain sugar. If you are a diabetic, you should only drink 'dry' red and white wines and sparkling wines, and when mixing drinks use a no or low calorie ('diet') mixer such as diet cola, diet ginger ale, diet lemonade, diet soda and diet tonic water. For example, high alcohol and high sugar liqueurs and fortified wines are not recommended for diabetics.

For further information on diabetes, please refer to the website of Diabetes Australia on: <http://www.diabetesaustralia.com.au> or that of the American Diabetics Association: [www.diabetes.org](http://www.diabetes.org)

## References and further reading

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