



# GDL (Glucan Delta Lactone)



Glucan Delta-Lactone (GDL) is a fermented rice sugar.

It is added to meat to give it tartness as well as increase the acidity of the meat batch. It is a harmless food additive that is completely metabolized by the human body into sugar.

In 1933 the committee of the Food of the American Medical Association accepted GDL as a safe non-toxic food grade chemical. When added to meat, GDL reacts with the water within the meat to form laconic acid, which lowers the pH in the meat system.

GDL can be used in both fermented sausages and cooked sausages to aid in fermentation acceleration, colour development and reduce curing time.

## Fermented Sausages:

In traditional methods of Dry/Semi-dry sausage manufacturing, sodium nitrate was used in processing to give an attractive cured colour and give a longer shelf life. This was a slow process though, taking approximately 3 months from start to finish of the sausages production. Due to an increasing demand for sausages, GDL was introduced because it reacts with the bonded water in the meat and hydrolyses into laconic acid. This hydroxylation causes a controlled drop in pH gradually over a few hours. The benefits of this controlled drop in pH is that GDL causes an acidic environment in the meat, in which the good bacteria wanted in the fermentation will thrive. This acidic environment also inhibits the unwanted bacteria that cause spoilage to occur because these bacteria that spoil food products do not like acidic environments. The acidification accelerates colour development, improving the colour of the finished product. The gluconic acid will also coagulate the protein and stabilize the final product, which improves its slicing ability.

Adding 0.1% (1g/kg meat) GDL lowers the pH in the meat by 0.1  
Example: Initial meat pH is 5.8, add 0.4% GDL will lower ph to 5.4

Processing Note: It is important that the meat product be stuffed immediately after the GDL is added and then moved into heat processing without delay.

**Glucono Delta-Lactone** → (reacts with free water in meat) → **Gluconic acid** → (controlled drop in pH) → **Dry/ semi-dried sausage with no fermentation from unwanted bacteria.**



## Cooked Sausages:

In cooked sausage GDL is added to the raw meat for a different reason. Before the pH completely drops, the processed sausages are cooked, slowing the process of hydroxylation so that fermentation does not occur. This process will reduce the time that is needed for curing due to the lower pH in the meat and it will produce a better colour and give the cooked sausage better stability.

In Canada it is stated in the Food and Drug Regulations that 0.5% is allowed in the finished cooked meat product. GDL is permitted in dry sausages according to GMP (Good Manufacturing Practices) and is recommended at a level of 1%.

