

Pineapple Juice as a Meat Tenderizer

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Sometimes you may wonder just how certain discoveries were made and why they work. This may be the case with using pineapple juice to tenderize meat. Who would have thought of putting pineapple juice on meat to make it easier to chew? Perhaps that wasn't the way it happened at all. It could have been added to meat simply to provide a novel flavour and voila - it also happened to make the meat more tender.

Pineapples were regarded as a medicinal plant in tropical areas long before modern chemistry began to investigate what gave them their special properties. In the 1890's, chemists were able to isolate an enzyme from pineapples that they called "bromelin". Later, the spelling was changed to "bromelain" to conform to a more scientific naming system.

Enzymes are special protein molecules that have what is referred to as biological activity. Each enzyme tends to do a rather specific task – many of which are important in the human digestive process. There are amylases that break down starch molecules into their small glucose units so our bodies can utilize them as an energy source. Lactase is an enzyme that breaks down lactose in milk into glucose and galactose. Individuals whose bodies do not produce this enzyme are said to be lactose intolerant, and they cannot properly digest milk-based products that contain lactose.

In the case of pineapples, the bromelain is actually a mixture of two enzymes classed as proteases that break down proteins. These proteases target the large protein molecules in meats (specifically the connective proteins called collagen), and break them down into shorter segments. In doing so, they weaken the structure of the meat and tenderize it.

If you are tempted to use pineapple juice as a tenderizer, be sure to get it from a fresh pineapple. This will ensure that the proteases are active and able to perform their desired job. Pineapple juice in drinks and the juice from canned pineapple have been heat-treated to prevent spoilage, and thereby enhance the shelf-life of the product. Since enzymes are quite sensitive to heat, they easily become deactivated in canning and juice making processes.

You can also buy bromelain in a more concentrated, powdered form to sprinkle on meat, or used in a marinade.

Some people worry about what happens when the proteases in fresh pineapple juice contact their tongue and create a tingling sensation. This shouldn't be a major concern since the effect of the bromelain is usually quite slight. The tongue can easily and

quickly repair any minor effects of short-term exposure to small amounts of bromelain. Once bromelain is consumed, your body begins to digest it and makes it harmless.

I remember as a kid, my mother always said that you should never use fresh pineapple when making a jellied salad. However, it was okay to use canned pineapple. Now, the reason has become abundantly clear. The bromelain enzyme in the fresh pineapple will start to break down the gelatin molecules which are really proteins. When this happens, there is nothing left to create the cross-linked structure necessary to hold the jellied salad together. If canned pineapple is used, the bromelain is no longer active due to the heating in the canning process. This means there is no longer a risk of it attacking any proteins it encounters.

Another source of protease enzymes that can be used is papayas which contain papain. Papain functions in a manner quite similar to bromelain.

Once again, we have a natural approach to solving a problem – in this case tenderizing meat.



Pineapples produce a mixture of several enzymes that can be used to tenderize meats.