

# Garlic Sources in Animal Production



## Introduction:

Garlic derived products have seen a rise in popularity as a supplement in feed and minerals for use in cattle production. Castro Alvarenga et al. (2004) reported that garlic residue added to mineral salt reduced tick prevalence in cattle by 50% or more. Massariol et al. (2009) documented that surface application of 200g of minced garlic to cattle reduced tick coverage by an average of 51% and appeared to improve milk sensory scores (likely due to reduced stress and blood loss from tick parasitism). Most recently, Durunna and Lardner (2021) documented how feeding of garlic powder in a trace mineral supplement can dramatically reduce fly abundance and defensive behaviors over 2 seasons.

## Powder vs Oil:

Generally, there are 3 types of garlic products. First there is whole garlic (chopped, minced, ground, etc.), which was used in the research by Massariol et al. (2009). This form contains all parts of the garlic and can have an oil content somewhere around 0.5 to 1%. It is very rare to see its usage outside of a research setting. This form is also the raw material used for steam distillation of garlic (figure 1).

Extraction of garlic oil is the main objective of garlic steam distillation, as garlic oil has a high value for the human food industry for use in garlic infused foods and flavorings. Production of garlic oil increases the concentration of compounds associated with garlic's unique aroma, such as diallyl sulfide or diallyl disulfide.

Garlic powder is the by-product of garlic processing for garlic oil. It contains minimal amounts of residual oil, and large amounts of everything else that makes up whole garlic (protein, fiber, ash).

## Why it matters:

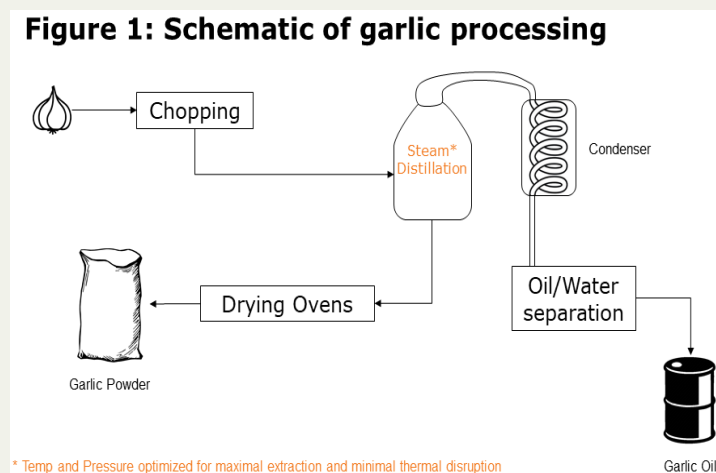
Analysis of several garlic products on the market (Table 1) reveals a substantial difference in the amount of diallyl sulfide/ disulfide in products based on garlic powder and those based on garlic oil. Unsurprisingly, the garlic-powder based products contain very little to no detectable amount of these 2 key compounds. After all, the steam distillation process was designed to maximize their yield in the garlic oil. Oil-based products, however, are quite good sources of both diallyl sulfide and diallyl disulfide for the exact same reason.

Table 1. Concentration of diallyl sulfide and diallyl disulfide in commercially available garlic products.

Compound	Powder-based	Oil-based
Diallyl sulfide	-	60 ppm
Diallyl disulfide	14 ppm	439 ppm
Products included	4	2

Source: QualiTech Research

If you'd like to learn more about our garlic-oil based Feedbuds® Garlic, contact your local QualiTech representative, or visit us at [www.QualiTechco.com](http://www.QualiTechco.com)



## Literature:

Castro Alvarenga, L., et al. (2004). *Ciênc. agrotec.*, Lavras 28(4): 906-912.  
 Massariol, P. B., et al. (2009). *Rev. Bras. Pl. Med.* 11(1): 37-42.  
 Durunna, O. and H. Lardner (2020). *Sustainable Agriculture Research* 10(1).

