

# Malted Seed Tea

*This recipe is for an active enzyme tea produced with malted seeds.*

## What are malted seeds?

### Barley Malt Defined:

Source - <http://www.howtobrew.com/section2/chapter12.html>

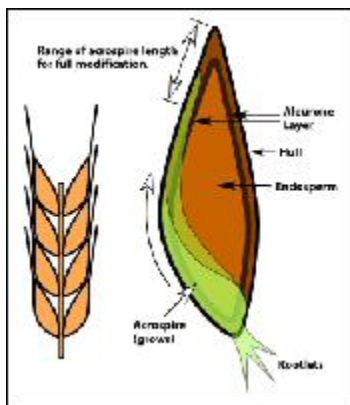


Figure 69: A simplified diagram of a barley kernel during malting, showing a progressive picture of how the acrospire (the plant shoot) grows along one side of the kernel. As it grows, pre-existing enzymes are released and new enzymes are created in the aleurone layer which "modify" the endosperm (the protein/carbohydrate matrix starch reserve) for the acrospire's use.

Malted barley is the source of the sugars (principally maltose) which are fermented into beer. The malting process allows the grain to partially germinate, making the seed's resources available to the brewer. During germination enzymes in the aleurone layer (Figure 69) are released, and new enzymes are created, that break down the endosperm's protein/carbohydrate matrix into smaller carbohydrates, amino acids and lipids, and open up the seed's starch reserves. The endosperm is composed of large and small starch granules that are packed like bags of jellybeans in a box. The cell walls (bags) within the matrix holding the starch granules (jellybeans) are primarily composed of beta-glucans (a type of cellulose), some pentosans (gummy polysaccharide) and some protein. The box in this metaphor is the outer husk. The degree to which the enzymes tear open the bags and start unpacking the starch granules (i.e. breakdown the endosperm) for use by the growing plant (or brewers in our case) is referred to as the "modification." One visual indicator that a maltster uses to judge

the degree of modification is the length of the acrospire which grows underneath the husk. The length of the acrospire in a fully modified malt will typically be 75-100% of the seed length.

***If germination continued, a plant would grow, and all of the starches that the brewer hoped to use would be used by the plant.*** So, the maltster gauges the germination carefully and stops the process by drying when he judges he has the proper balance between resources converted by the acrospire and resources consumed by the acrospire.

The purpose of malting is to create these enzymes, break down the matrix surrounding the starch granules, prepare the starches for conversion, and then stop this action until the brewer is ready to utilize the grain. After modification, the grain is dried and the acrospire and rootlets are knocked off by tumbling. The kiln drying of the new malt denatures (destroys) a lot of the different enzymes, but several types remain, including the ones necessary for starch conversion. The amount of enzymatic starch conversion potential that a malt has is referred to as its "diastatic power".

## What are Enzymes?

**From Wikipedia:**

**Enzymes** /ˈɛnzaɪmz/ are large biological **molecules** responsible for the thousands of **metabolic processes** that sustain life.<sup>[1][2]</sup> They are highly selective **catalysts**, greatly accelerating both the rate and specificity of metabolic reactions, from the digestion of food to the synthesis of **DNA**. Most enzymes are **proteins**, although some **catalytic RNA molecules** have been identified. Enzymes adopt a specific **three-dimensional structure**, and may employ organic (e.g. **biotin**) and inorganic (e.g. **magnesium ion**) **cofactors** to assist in catalysis.

In enzymatic reactions, the molecules at the beginning of the process, called **substrates**, are converted into different molecules, called **products**. Almost all chemical reactions in a **biological cell** need enzymes in order to occur at rates sufficient for life. Since enzymes are selective for their substrates and speed up only a few reactions from among many possibilities, the set of enzymes made in a cell determines which **metabolic pathways** occur in that cell. **Enzyme localization** studies reveal that specific cell organelles are differentially enriched in specific set of enzymes, required for compartmentalized functioning of cell, tissue, organ and/or body metabolism.

Like all catalysts, enzymes work by lowering the **activation energy** ( $E_a^\ddagger$ ) for a reaction, thus dramatically increasing the **rate of the reaction**. As a result, products are formed faster and reactions reach their equilibrium state more rapidly. Most enzyme reaction rates are millions of times faster than those of comparable un-catalyzed reactions. As with all catalysts, enzymes are not consumed by the reactions they catalyze, nor do they alter the **equilibrium** of these reactions. However, enzymes do differ from most other catalysts in that they are highly specific for their substrates. Enzymes are known to catalyze about 4,000 biochemical reactions.<sup>[3]</sup>

## How To Use Malted Barley For Gardening

If you don't have a good source for Malted seeds, BuildASoil carries multiple Malted seeds from an artisan malting company in Colorado.

Directions: Per gallon of Water

1. Take 1 ounce of Malted Barley Seed and blend into a powder using a cheap coffee grinder or a food processor.
2. Take the "Malted Barley Flour" that you just made and add this to 1 gallon of water.
3. Use a cheap aquarium pump and 1 or 2 small cheap air-stones to bubble this Malted Seed Tea for 24 hours. (This will prevent fermentation and constantly keep the particles in motion)
4. Be aware that this will create a massive amount of foam so usually use a 5 gallon bucket and never more than half full... you can always bubble more Malted Barley Powder in less water and add more water later when you are ready to use it. Example, I grind 4-5 ounces of Malted Barley seed and instead of bubbling in 4-5 gallons of water, I only bubble them in 2-3 gallons of water and then add the rest when the 24 hour brew time is up. This way the foam doesn't overflow but I still make enough for me to use.
5. Strain into your Chapin Sprayer or into another bucket, put the muck into your worm bin, feed the chickens or toss it in the compost pile.
6. Then use this Enzyme tea as a root drench and apply to the soil immediately after it's done brewing.

## Other Considerations with Malted Seed Tea:

Because enzymes are catalysts and help breakdown complex organic compounds into simpler organic products there is reason to believe that enzyme teas would be superior to plain water when making a botanical tea.

Something to try, add about 1/8<sup>th</sup> of a cup of kelp meal to your 1 ounce of barley seed and blend this mixture into flour. Then follow the normal directions to bubble for 24 hours and then strain and use immediately. I think you'll notice a dramatic plant response within 12 hours and be very pleased with this tea.

Think about it, if just bubbling kelp meal in water for 24 hours works well while only extracting the water soluble compounds, imagine now what happens when that water is full of enzymes that can break down more phytochemicals from the kelp meal without using fermentation or heat. While this is just experimental information I still encourage you to try it and see what you think!

Oh yeah and when you are done, add half dose of Ful-Power along with some aloe vera juice and coconut water.... Why Not!?

## Quote Straight from Coot:

"Here's what I suggest trying: go to a homebrew store and purchase malted barley grain which looks like raw grain. This has been malted at professional malting houses to levels that none of us could possibly achieve unless we have a compound microscope available and the skill set to monitor the enzyme levels. The malted grains available usually include barley (always 2 Row and sometimes 6 Row versions), rye, red wheat and white wheat.

Process:

Take 1 oz. malted grain and grind that to a powder. I use a cheap (like \$10.00) coffee bean grinder from ChinaMart. Add this to 1 gallon of dechlorinated water. If you decide to aerate just monitor it closely because you will have a lot of foam to deal with. I add the appropriate amounts of Aloe vera extract (200XX freeze-dried powder) and pure Fulvic acid (BioAg Ful-Power). Apply to the soil.

You should expect to pay between \$.90 - \$1.20 per lb. of malted barley grain. At 1 oz. per gallon you can see how inexpensive it is to use...even the organic malted barley grain I purchased in Portland was only \$1.19 per lb. and was made using Oregon-grown barley (Eastern Oregon)"