***Saccharomyces cerevisiae* var. *diastaticus* Information Sheet:**

*Saccharomyces cerevisiae* var. *diastaticus* is a natural variant of *Saccharomyces cerevisia*e that can hydrolyze wort dextrins into fermentable sugars (Andrews and Gilliland, 1952). This ability has been linked to the presence of *STA* genes, which encode for the exoenzyme glucoamylase, also referred to as amyloglucosidase (Tamaki, 1978). This amylolytic activity can lead to hyperattenuation, and/or secondary fermentation which can cause excess carbon dioxide formation in bottles, cans or kegs. It is, for this reason, that contamination with *Saccharomyces cerevisiae* var. *diastaticus* is generally unwanted. Rising interest in *Saccharomyces cerevisiae var. diastaticus* has led to more research being done on these strains in both academia as well as in the brewing world. Information is continually being generated in order to help us collectively understand *Saccharomyces cerevisiae* var. *diastaticus* better.

*Saccharomyces cerevisiae* var. *diastaticus* is not a new contaminant. Wild yeast, in general, has been known as the culprit in creating overcarbonated beer since before it was described in 1952. Now with new identification techniques brewers can identify that some of the 'wild' yeast creating overcarbonation is *Saccharomyces cerevisiae* var. *diastaticus*. *Saccharomyces cerevisiae* var. *diastaticus* can be found in a variety of places in the brewery including, but not limited to: bottling lines, pipework, pitching yeast, the brewhouse, and fermentation cellar (Meier-Dornberg et al., 2017). Several microbiological techniques can be used for detection, such as growth on Lin's Cupric Sulfate Media (LCSM), starch agar plates, as well as growth in certain enrichment broths. Additionally, since the dextrinase activity has been linked to *STA* genes, polymerase chain reaction (PCR) can be used to detect *Saccharomyces cerevisiae* var. *diastaticus* (Yamauchi et al., 1998) however, molecular techniques require specialized equipment and are more expensive than conventional plating techniques. These restrictive conditions mean these techniques are not feasible at every brewery, but certain independent laboratories offer these services. Interestingly, work done in our lab, as well as others, has indicated that the presence of the STA1 gene doesn't always lead to hyperattenuation. In fact, a recent genomic study has determined that a deletion in the promoter region of the STA1 leads to a decrease in diastatic ability (Krogerus et al., 2019).

It is worth noting that not all *STA1* positive yeast are considered contaminants. In fact, there are several "classic" brewing strains that have been used and cultivated for more than 30 years and are generally classified as "high-attenuators."


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9495 Candida Street | San Diego, CA 92126 USA | Tel: 858.693.3441 | Fax: 858.693.1026