

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

**IS THE DIFFERENCE AMONG STRAINS OF *MEGASPHAERA ELSDENII* FOR
FERMENTING LACTATE *IN VITRO* RELATED TO GENETIC CAPABILITY OR JUST
ADAPTATION?**

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Megasphaera elsdenii is a rumen bacteria which is known for its role in fermenting lactate and thus attenuating rumen acidosis in cattle fed with high grains diets. Because of this role, attempts have been made to isolate acid-tolerant strains of *M. elsdenii* that have high capacity for fermenting lactate, its preferred energy source. Nonetheless, *M. elsdenii* has also been related to milk fat depression in high producing dairy cows, what still needed to be proved. Current isolates vary in their growth characteristics, perhaps as a result of the length of time and conditions under which they have been maintained in laboratory culture. Three strains of *Megasphaera elsdenii* were isolated from dairy cows from US Dairy Forage Research Center (USDFRC), Madison-WI, USA, using selective MDM media (lactate, yeast extract, trypticase), which were termed as strains 4251, 4257 and 4296. These strains were cultivated *in vitro* in culture tubes using MDM media and were compared to strain B159 and T81 during 24 hours. The strains B159 and T81 belong to stocks from USDFRC collection and were kept on -80°C until the study was started. In this study, all strains were kept growing in MDM medium containing 40 mM/L lactate in culture tubes under anaerobic and aseptic conditions during 24 hours on 39°C. The strains growth was measured using a spectrophotometer by optical density (OD) measurements, which were used to calculate growth rate by linear regression or by using nonlinear model (Gompertz Model), as well as to estimate lag time. We found that Strain B159 had a higher growth rate (0.516 h⁻¹) than T81 (0.459 h⁻¹), and specially than strains 4251 (0.346 h⁻¹), 4257 (0.425 h⁻¹) and 4296 (0.276h⁻¹) (P<0.0001). The estimated lag time was also higher for strain B159 (.751 h) than other strains (0.317 h), which means that there was not a higher initial concentration of cells of strain B159 what could be the cause for the higher growth rate observed. These data suggests a more complete adaptation to the laboratory culture conditions in the >40 y since its isolation. This behavior has been observed for many microbiologist in the lab including with *E. coli* strains, what should be considered when designing studies to compare strains in the lab for important traits that we want to evaluate in order to use these results for practical conditions.

Keywords: domestication in the lab, lactate fermenter, ruminal bacteria

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