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Calf Note 199 – A handy BRIX calculator

Introduction

The BRIX refractometer is a versatile device. Originally designed to measure sugar concentration in liquids such as grapes (for wine production) and beer, the dairy industry has adapted the tool for several purposes. Researchers have shown an acceptable relationship BRIX readings and whole milk solids (Moore et al., 2009), colostrum IgG (Quigley et al., 2013) and serum IgG (Morrill, et al., 2013; Deelen et al., 2014; Elsohaby et al. 2015). Note that there doesn't seem to be an acceptable correlation between BRIX readings and reconstituted milk replacer, colostrum replacers or after addition of any powder to whole milk. More information on using a BRIX refractometer is [here](#).

Remember, the BRIX refractometer does not measure total solids or IgG concentration directly. It simply measures the bending (“refraction”) of light as it passes through the liquid. Researchers have developed regression equations based on the relationship between the BRIX reading and the measurement of interest. In all cases, the calculated values are ***estimates only*** – these estimates are useful for on-farm use, but keep in mind that these measurements are not perfect and there is error associated with each relationship.

To make the BRIX refractometer easier to use and adapt, I've created a “handy dandy” Excel spreadsheet that can be used and any of the 3 purposes (serum IgG, colostrum IgG or whole milk solids).

Click [here](#) to download the Excel spreadsheet containing the BRIX calculator.

Instructions

- (1) Select the type of conversion you'd like to make (cell C3)
- (2) Enter the BRIX reading (cell C4)
- (3) The result will display in cell C5. You can also look at the graph to see where on a typical curve your sample falls. References are displayed at the bottom of the calculator.

Enjoy!

References

- Deelen S, T. Ollivett, D. Haines, and K. Leslie. 2014. Evaluation of a Brix refractometer to estimate serum immunoglobulin G concentration in neonatal dairy calves. *J. Dairy Sci.* 97:3838–3844.
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- Morrill, K. M., J. Polo, A. Lago, J. Campbell, J. Quigley, and H. Tyler. 2013. Estimate of serum immunoglobulin G concentration using refractometry with or without caprylic acid fractionation. *J. Dairy Sci.* 96:4535–4541.
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