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| **Equation** | **Interpretation** |
| 1. $4 malate=Total $
 | [4-13C] malate, equivalent to [1-13C] malate |
| 1. $2C3 malate=Total $
 | Enrichment in carbons 2 and 3 of malate |
| 1. $Turnover=\left(\frac{Tracer APE}{Plasma APE }-1\right)\*Infusion rate$
 | Whole-body endogenous glucose or palmitate production |
| 1. $GNG= Glucose turnover$
 | Whole-body gluconeogenesis |
| 1. $\frac{V\_{PEPCK}}{V\_{GNG}}\~\frac{V\_{PC}}{V\_{GNG}}=\frac{[glucose}{XFE^{2}}$
 | Fraction of gluconeogenesis derived from pyruvate |
| 1. $XFE=\frac{1}{1+\frac{[glucose}{2\*[glucose}}$
 | Fractional triose enrichment |
| 1. $Corrected \left[\right]glucose=Measured [glucose-2\*[C4C5C6-]glucose$
 | Doubly-labeled glucose arising from the condensation of two singly labeled trioses, correcting for doubly labeled glucose arising from one doubly labeled triose condensing with an unlabeled triose |
| 1. $\frac{V\_{PC}}{V\_{CS}}=\frac{\left[5-\right]glucose}{2\*\left[4-\right]glucose}$
 | Rate of pyruvate carboxylase anaplerosis relative to TCA cycle flux |
| 1. $\frac{V\_{PDH}}{V\_{CS}}=\frac{\left[4-\right]glutamate}{\left[\right]alanine}$
 | Fractional contribution of glucose to the TCA cycle |
| 1. $V\_{PC}=\frac{V\_{PC}}{V\_{GNG}}\*V\_{GNG}$
 | Absolute rate of gluconeogenesis from pyruvate |
| 1. $V\_{CS}=\left(\frac{V\_{PC}}{V\_{CS}}\right)^{-1}\*V\_{PC}$
 | Absolute TCA cycle flux |
| 1. $V\_{PDH}=\frac{V\_{PDH}}{V\_{CS}}\*V\_{CS}$
 | Absolute rate of glycolytic carbon entry into the TCA cycle |
| 1. $V\_{FAO}=V\_{CS}-V\_{PDH}$
 | Absolute rate of entry of carbons from oxidized fatty acids into the TCA cycle |