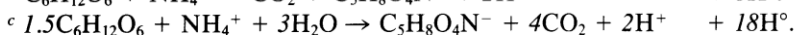
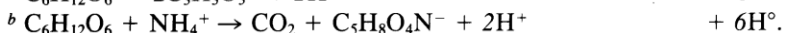


Table 2. Comparison of metabolic pathways from glucose to lactate, to glutamate or to CO₂

Per mole glucose	Lactate ^a via Embden– Meyerhoff– Parnas	Glutamate A ^b via CO ₂ fixation	Glutamate B ^c via glyoxylate shunt	CO ₂ ^d via Krebs citric acid cycle
Percent energy derived from substrate level phosphorylations	100	10	10	11
Number of substrate level phosphorylations	2	1	1.5	4
Free energy dissipation ^e Δ <i>G</i> ' _{ox} (pH 7)				
In carbon transformation (kJ)	–209.80	–228.8	–233.82	–243.82
In further oxidation (kJ)	–47.8	–2.7	–2.7	0
Electrons produced (at levels of NADH + H ⁺)	0	6	12	24


^e Free energy dissipation expressed as Δ*G*' (pH 7) in kJ per mole of two-carbon compound transformed. This is the energy available in oxidizing the compound with NAD⁺. Each pair of electrons at this level can result in 219 kJ of energy dissipated in the electron transport chain with concomitant energy production to an extent depending on the coupling to phosphorylation. A mole of high-energy bonds Δ*G*' (pH 7) is worth 34.5 kJ. To convert values given in kJ to kcal, divide by 4.185.