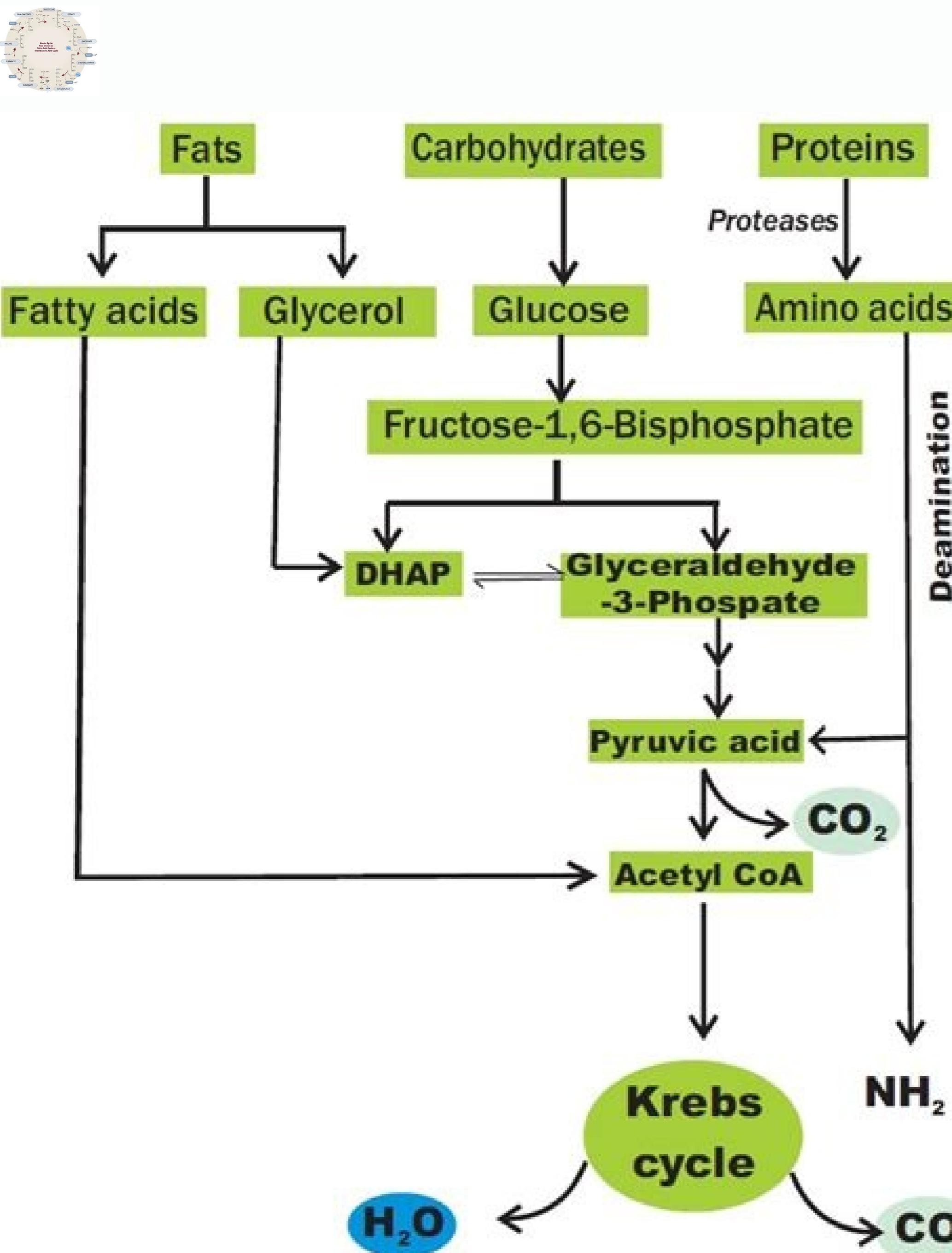




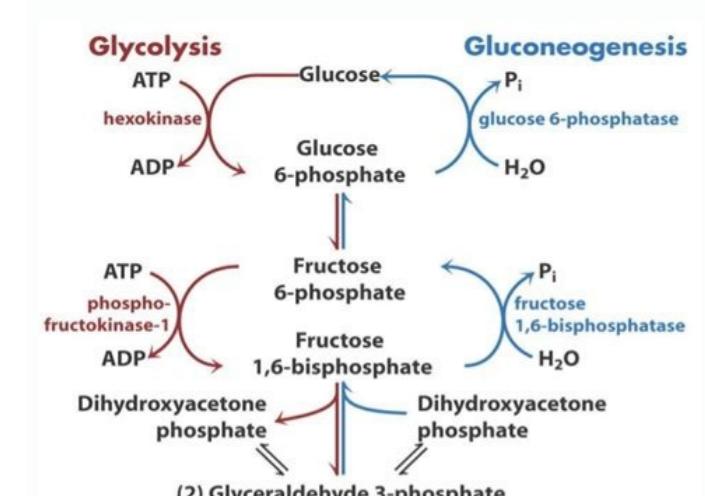
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**Figure 14.9:** Alternative substrates for respiration



(a) Aerobic respiration and Anaerobic respiration	
Aerobic respiration	Anaerobic respiration
1. It uses oxygen for deriving energy.	1. It occurs in the absence of oxygen.
2. It occurs in cytoplasm and mitochondria.	2. It occurs in cytoplasm.
3. The end products of aerobic respiration are carbon dioxide and water.	3. The end products of fermentation are ethyl alcohol and carbon-dioxide.
4. Complete oxidation of respiratory substrate takes place.	4. Incomplete oxidation of respiratory substrate takes place.
5. 36-38 ATP molecules are produced.	5. Only 2 ATP molecules are produced.

(b) Glycolysis and Fermentation	
Glycolysis	Fermentation
1. Glycolysis occurs during aerobic and anaerobic respiration.	1. Fermentation is a type of anaerobic respiration.
2. Pyruvic acid is produced as its end product.	2. Ethanol or lactic acid is produced as its end product.

### Anaplerotic reactions replenish intermediates in citric acid cycle

- As intermediates are removed to serve as biosynthetic precursors, they are replenished by anaplerotic reactions.
  - Under normal circumstances, removal and replenishment are in dynamic balance so intermediates stay almost constant.

Anaplerotic Reactions		Tissue(s)/Organism(s)
Reaction		
Pyruvate + HCO <sub>3</sub> <sup>-</sup> + ATP $\xrightleftharpoons{\text{pyruvate carboxylase}}$	oxaloacetate + ADP + P <sub>i</sub>	Liver, kidney
Phosphoenolpyruvate + CO <sub>2</sub> + GTP $\xrightleftharpoons{\text{PEP carboxylase}}$	oxaloacetate + GTP	Heart, skeletal muscle
Phosphoenolpyruvate + HCO <sub>3</sub> <sup>-</sup> $\xrightleftharpoons{\text{PEP carboxylase}}$	oxaloacetate + P <sub>i</sub>	Higher plants, yeast, bacteria
Pyruvate + HCO <sub>3</sub> <sup>-</sup> + NADPH $\xrightleftharpoons{\text{malic enzyme}}$	malate + NADP <sup>+</sup>	Widely distributed in eukaryotes and prokaryotes

Citric acid cycle intermediates amino acids. Citric acid cycle intermediates can be used as precursors in the biosynthesis of

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Tips for avoiding acid reflux: Keep a daily symptoms and food intake. These include: Being with overweight or obeseMokingDrinking too much cafe, certain connective tissue disorders turned into your stomach or throataving a hiatus certain foods too can trigger the innence of symptoms . The acid reflux is common, and most people will experience symptoms at some point in their life. In rare cases where medication is not successful in alleviating symptoms, surgery can be suggested to repair and strengthen the esophageal spherner and prevent gatric reflux. Resource Links: More from SymmomAfind.com As a result, the stomachic acid and food particles can flow back from the stomach, through the sphiCNTER, and even the ESÂFAGO. Not treated, GERD is associated with an increased risk of a Construction Condition called Barrat's Ess'Fago and Esophatian Cancer, especially in smokers and those who drink very alcohol . The side effects of the antiquities include swelling, wind and constipation. In patients with acid reflux, the esophatic spherner can be weak, and can be unable to completely close. It is possible to live a balanced and healthy life, even if you have acid reflux. The back flow of stomach and food particles create the uncomfortable symptoms à € à € à € of heartburn. You should consult your doctor before taking PPI medication if you have any other health care, or if you are taking any other medicine, supplements, vitamins, Recreational drugs. If you are facing more frequent acid reflux, more than twice a week, you should see your doctor. In addition, Medications can also trigger heartburn, such as steroids, medications for arterial, non-steroidal non-steroidal pressure a ravel edop ,odatart ©Ã ofÃn e aicnÂAuqerf moc erroco odic;Ã oxulfer o eS ?odicÃ oxulferR asuac euq O etitepa ed adrePavissecxe agidaFlanoicnetni ofÃn osep ed adrePrilogne me edadlucifiDadacovorp ofÃn ra ed atlaFoicÂcrexe o sÂpa uo etnemairotaela egrus euq otiep onroDsezef san eugnas ed aÃnÃeserp uo saterp uo sarucse sezeFeugnas ed sotim'ÃV ÂÂÂ¢AmralaÂÂÂ¢Ã totife setniuges sod mugla ritnes eS .ÂÂ "A" levÂssop res edop uo ,ozarp ognol a ofÃnÃacidem moc raunitnoc rasicerp edop ÂÂcoV Â.pukcab ed lacamotse odic;Ã ed odatluser omoc ofÃnÃiefer ednarg amu sÂpa rerroco edop euq lev;Âtrofnocsedgamieuq ed ofÃnÃasnes amu ©Ã,aiza omoc odirefer sezev satium ,odic;Ã oxulfer O segamI yteG/+E/oidutS tranyhP :aisetroc otoF ?odicÃ oxulferR O atarT ÂÂcoV omoC .)EGRD( ocig;Âfoseortsag oxulfer od aÃnÃeod ad otnemivlovnese oa odaicossa ;Âtse etnetsisrep odic;Ã oxulfer O .sianoicida setset raticilos medop sele ,etigafose uo EGRD omoc etnecajbus ofÃnÃidnoc amu revah edop odapucoerp revitse ocid©Ãm ues o eS .ogam'Âtse od odic;Ã ed ofÃnÃudorp ad etrap raeuqolb arap manoicnuf sPPI sO .odic;Ã oxulfer rineverp arap acit;Âliforp ofÃnÃacidem radnemocer medop selE .lev;Âtrofnocsed ofÃnÃidnoc atse ratart e rineverp omoc e asuac o euq o ,odic;Ã oxulfer o arolpxe ogitra etsECA dicpeP( aniditomaf e )catnaZ( aniditinar ,olpmexe rop ÂÂÂ¢2H serodaeuqolb ©Ã odasu etnemumoc otinemacidem ortuO .)cesolirP( lozarpemoe e )dicaverP( lozarpemoe ,olpmexe rop ÂÂÂ¢ )PPI( sejÅtorp ed abmob ad rodibini mu ©Ã etneuqerf siam otinemacidem O .ogam'Âtse od odic;Ã ed ofÃnÃudorp a rizuder arap manoicnuf m©Ãbmat 2H anÃefac moc sadibeb e ;sadacifiesag sadibeb ;soet;Âl sotudorP ;etalocohc ;sadalas arap ofÃnÃaraperP ;atan ed esab Â ohlom ;esenoiam ;agietnam ;arudrog ed roet odavele moc sejÅtiefer ;sosorudrog sotnemila meulcni setsE .acid©Ãm atiecer mes soditbo res medop PPI sotnemacidem snuglA .sovisserpeditna e sianoicpecnositna salulÃp ,socitÂabitna ,oneforpubi o omoc ,ENIA( siarivorterritna sotnemacidem omoc omoc ,sejÅidnoc Gastroesophageal reflux disease (GERD). Picture Courtesy: Science Photo Library / Getty Images may include: Superior gastrointestinal endoscopy or esofagogastroduodenoscopy (EGD), in which a small camera is passed through your mouth and then closes, preventing reflux. These are in mastigic tablets or liquid shape. form.



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