Starch is stored in plastids of plant storage organs or in chloroplasts of photosynthetic tissues. This storage polysaccharide can be degraded hydrolytically by -amylases (EC 3.2.1.1.) or phosphorolytically by phosphorylases (EC 2.4.1.1.). An extract prepared from tobacco leaves (Nicotiana tabacum L.) was found to disintegrate the dye–labeled starch substrate. The optimal pH of the hydrolytic cleavage was 8.0, while the optimal pH of the phosphorolytic cleavage was 7.0. The highest starch cleavage rate was observed at 55 °C. -amylase is more important for cleavage of starch in tobacco leaves than phosphorylase.