Zucker–Hammett hypothesis

This hypothesis states that, if in an acid catalysed reaction, $\log_{10}k_1$ (first-order rate constant of the reaction) is linear in H_0 (Hammett acidity function), water is not involved in the transition state of the rate-controlling step. However, if $\log_{10}k_1$ is linear in $\log_{10}[H^+]$ then water is involved. This has been shown to be incorrect by Hammett himself.

Source:
PAC, 1994, *66*, 1077 *(Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994))* on page 1176