$$B(k; n, p)$$

$$p_1 = \frac{k_1}{n_1} \quad p_2 = \frac{k_2}{n_2} \quad p = \frac{k_1 + k_2}{n_1 + n_2}$$

$$\Lambda = \frac{B(k_1; n_1, p)B(k_2; n_2, p)}{B(k_1; n_1, p_1)B(k_2; n_2, p_2)}$$

$$-2\log\Lambda \sim \chi^2$$