Biochemical reactoins summary

① coagulase test → fibrinogen —coagulase→ fibrin (clotting) ⊕ ex: S.aureus ⊕ vs another S.staphylococci ⊖

② catalase test → H_2O_2 —catalase→ $H_2O + CO_2$ (bubbles) ⊕ ex: Staphylococci ⊕ vs streptococci ⊖

③ oxidase test → oxidase reagent (Kovac's reagent) —oxidase→ purple ⊕ ex: pseudomonas ⊕ vs enterobacteriaceae ⊖

④ Indol ring test → Tryptophan (peptone) —tryptophanase→ indol —Kovac's reagent→ red ring ⊕
Tryptophan —no tryptophanase→ X —Kovac's ✓→ no red ring ⊖

⑤ MR (methyl red) test → glucose —fermentation ST/48h→ acids —MR:→ red ⊕ (acidic)
yellow ⊖ (alkaline)

⑥ V.P test → glucose —ST/48h→ acetyl methyl carbonyl (Acetoin) —40% KOH + α naphthol→ Diacetyl (red) ⊕ ⇌ MR ⊖ (opposite)

⑦ Citrate utilization → Sodium Citrate → CO_2 + Na → Sodium carbonate —ind: bromothymol blue→ (blue) ⊕ (alkaline)
(green) ⊖ (neutral)

⑧ Urease test → Urea —urease→ NH_3 + CO_2 —ind: phenol red→ pink ⊕ (alkaline)
yellow ⊖ (acid)

⑨ TSI (triple sugar iron) → 0.1% gluc + 1% lact + 1% sucr + ferrous sulfate
- phenol red → (acid) yellow bellow (gluc metabolized) —phenol red→ (acid) yellow above (lac metabolized) (A/A)
- yellow bellow → red above (lac not metabolized) (K/A)
- red → red (neither lac nor gluc is metabolized) (K/K)
- sulfur reduction → H_2S + Fe → Ferrous sulfide (black) ⊕

⑩ phenylalanine deaminase → phenylalanine —ph. deaminase→ phenyl pyruvic acid —+ Fecl3→ green ⊕

⑪ ornithine decarboxylase → ornithine + gluc —ind: bromocresol purple→ purple ⊕ or. decarboxylase present ✓
yellow ⊖ or. decarboxylase absent ✗ (but gluc is metabolized)

⑫ API test → group of systems for different organisms