(1). AIM: To prepare crystals of **Potassium cis-dioxalatodiaquachromate(III) dihydrate/ Cis-K[$Cr(C_2O_4)_2(H_2O)_2$].$2H_2O$):**

Equipment's Required: China Dish, Water Bath, Spatula, burner and required glassware's

Reagents Required:

Aqueous Oxalic acid = 500 mg
Potassium dichromate = 250 mg
Ethanol= 10 ml

Procedure:

1. Mix (**500 mg**) of aqueous oxalic acid with (**250 mg**) of potassium dichromate, grind the mixture using ceramic mortar, and continue gridding while you will get the homogeneous mixture.
2. Use freshly washed a ceramic bowl with distilled water and put the above prepared mixture powder and cover properly it with the watch glass.
3. Put this ceramic bowl on a quiet hot slab/ Sand bath and wait for a small period 10-15 Minutes (keen observation required), as a rapid and continuous reaction will start leading to form a dark and heavy liquid.
4. Add to the dark liquid (10ml) of ethanol and crush contains using a metal spoon/ spatula until it gets solidify.
5. Filter the solution to obtain granular crystals, which represents cis isomer.
6. Weight the precipitation (cis complex) and calculate the isolated yield.

Chemical Reaction:

$$K_2Cr_2O_7 + 7H_2C_2O_4.2H_2O \rightarrow 2\text{Cis-}K[Cr(C_2O_4)_2(H_2O)_2].2H_2O + 13H_2O + 6CO_2\uparrow$$

(2). AIM: To prepare crystals of **Potassium trans-dioxalatodiaquachromate(III) dihydrate/ Trans-$K[Cr(C_2O_4)_2(H_2O)_2].2H_2O$):**

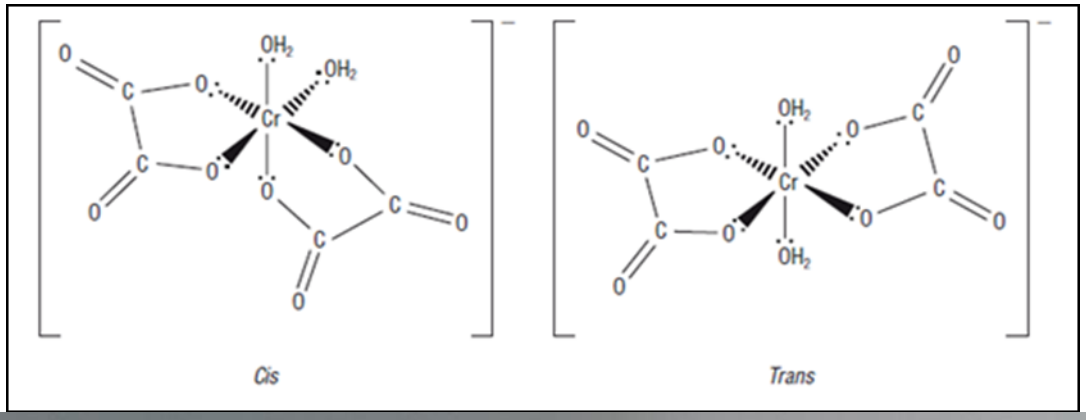
Equipment's Required: China Dish, Water Bath, Spatula, burner and Beaker

Reagents Required:

Aqueous Oxalic acid = 500 mg
Potassium dichromate = 150 mg
Cooled Ethanol= 10 ml

Procedure:

1. Mix (500 mg) of aqueous oxalic acid with least quantity of hot distilled water in a beaker, and dissolve (150 mg) of potassium dichromate in least quantity of hot distilled water in another backer.
2. Add small portion wise dichromate solution to oxalic acid solution and cover the beaker with watch glass after each addition and stir it to carry on the reaction, and then leave the solution to cool down for (24) hrs at room temperature.
3. Filter the solution (Using Whatman filter paper), wash the crystals with (5ml) of distilled water, and then with cool ethanol to get trans isomer.
4. Dry the formed precipitation, and calculate the isolated yield of the complex.


Cis
Trans