



organisms because of their ability to enter the bodies of organisms and accumulate in their tissues [7]. When these pollutants enter their bodies aquatic organisms either dispose of them or store them in concentrations greater than what is present in the environment and it's called bioaccumulation which takes place by adsorbing ions on the membrane in contact with water through the passage of water by diffusion through semi-permeable membranes to the fluid of the body, indicated that the direct entry of substance chemical coating across the respiratory surface of fish is mostly by diffusion [8]. In young and old fish, the respiratory coating is a large and very thin barrier between water and blood where the entry of toxic pollutants unto the fish by the gills is more convenient and faster than taking them from other sources such as feed [9,10]. Therefore, many studies indicated the effects of these hydrocarbons and crude oil on physiological processes, respiration, reproduction and growth [11]. And many researches have referred to toxic effects on histological changes in addition to well sub lethal effects and inhibition in growth. Behavioral and low density of population of fishes, where the current study indicated changes in the level of bioaccumulation between the different tissues of the body of the fish, in addition some of the blood changes of the common carp fish that face these variables in freshwater rivers [12-14].

## MATERIALS AND METHODS

Fish samples were collected from the bank of Shatt al Arab in the north of the Basra city. The samples were transferred to the Tank for 10 days to acclimation under laboratory conditions at a temperature  $24 \pm 2^{\circ}\text{C}$  and also provided with continuous ventilation and feed with dry protein diet. After that, they measured the average weight as  $7 \pm 2$  gm. and  $11 \pm 3$  cm length, after acclimation period samples are divided with three replicate in with 5 samples of fish in each replicate for each oil concentration.

### Preparation of solution

The concentrations of crude oil dissolved in water were prepared in glass tanks of 50 leach, with that were experimental jars used according to methods of Meador JP [15]. After that, each tank contains 45 l, to which 500 ml of crude oil is added. It is placed into magnetic stirrer to mix the storage solution, at the end floating oil layer id separated, the stock solution is preserved, and the concentrations for the experiment are prepared .The various concentrations used were in the following order concentrations of oil were (0.12, 0.25,0.33 and 0.36 mg/l), the lasts aquaria used as the control [16].

### Bioaccumulation test

**Extraction from tissues:** Materials used to measure the bioaccumulation method in some tissues of carprio, Basra crude oil, benzene, methylhexan al alcohol, KOH, sodium sulfate and glass wool. Grimalt and Oliver method was used to Extract of HBC from samples of fish tissues then the hydrocarbons were extraction by thimble extraction for 24 hours after drying to temperature for  $70^{\circ}\text{C}$  after that, the HCB were measured in a spectroflurometer by wave length  $360 \lambda$ , where the

spectroflurometer method was adopted by (FAO1977) To measure the certain concentration of oil that calculates the bioaccumulation factor in the tissues of the ovaries, muscles liver. Of the fish C, Carprio under study using the method Doherty by used spectroflurometer instrument was calculated accumulation rates [17,18].

**Statistical analyses:** All data obtained from experimental groups were analyzed in Statistical Package for the Social Sciences (SPSS) 16.0. For the purpose of comparison between the accumulations rates by ( $M \pm SE$ ) then compared these values of variance and the focus has been the correlation coefficient calculation.

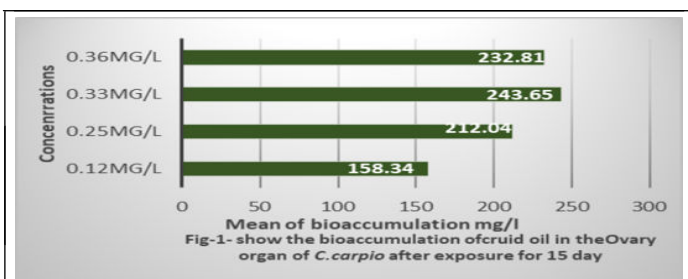
## Hematological test

**Hematological parameters test:** Blood Calculations are taken after the end of each period of exposure Blood samples are collected by cardiac puncture, hematological parameters for (R.B.C, Hb, HTC, PLT were determined Mean corpuscular (MCHC, MCH, MCV) were Calculations by using the method by Khoshbavar Rostam HA [19].

## RESULTS

### Bioaccumulation

The amount of bioaccumulation estimated by the, where the values showed differences in the levels of bioaccumulation depending on the concentration to which the fish was exposed and the type of tissue. The values indicated recorded in fish C. carprio ovaries higher than in liver and muscles during the exposure to concentration of crude oil for 15 days of exposure, The results illustrate that the level of accumulation in the ovary tissues was recorded according to the gradation of concentrations and respectively. The bioaccumulation mean in the ovary tissues of carprio during exposure to crude oil concentration (0.12, 0.25, 0.33, 0.36) mg/L in Figure 1. The bioaccumulation mean increased with the concentrations. Therefore, the (0.36 mg/l) recorded the highest value of bioaccumulation in the ovary tissues was (232.81 microgram/mg) and also recorded Significant differences ,as the higher the concentration , the greater bioaccumulation mean (Figures 2 and 3).



**Figure 1:** The bioaccumulation of cruid oil in the ovary organ of C.carpio after exposure for 15 day.

The bioaccumulation means in the carp muscle tissues. The concentration (0.36 mg/l) recorded higher mean of bioaccumulation compared to the Concentrations (0.33 mg/l), thus a significant differences was observed the concentrations







