beneficial or harmful, and are largely concentration-dependent (Ali et al., 2022; Dey et al., 2022). *Senna occidentalis*, a medicinal plant widely used in traditional systems and reported to possess potent bioactive constituents, warrants toxicological evaluation in aquatic organisms such as *Clarias gariepinus*. Egharevba et al. (2010) stated that *Senna occidentalis* L. Link (Leguminosae), formerly known as *Cassia occidentalis* L., is well-known for its wide range of medical applications and is utilized locally to treat various human and animal illnesses. However, *Senna species* seeds, leaves, and roots have been shown to have a variety of toxicities despite their enormous medicinal potential (Gebrelibanos et al., 2014). In other words, exposure to some of these plants may be toxic to humans and animals, even with the wide range of medicinal potentials exhibited by many botanical products (plants) (Belay and Enyew, 2016).

Hematological analysis of peripheral blood parameters and quantitative assessment of blood cell morphology serve as practical, cost-effective tools in fish toxicology (Witeska et al., 2023). Accordingly, the present study evaluated erythrocyte counts, leukocyte differentials, hemoglobin concentration, etc., in *Clarias gariepinus* exposed to *Senna occidentalis* leaf extract to assess hematotoxic potential. Packed cell volume (PCV) and haemoglobin concentration are standard indicators of anaemia in aquaculture (Afia and Gift, 2017), while RBC indices like MCHC, MCH, and MCV aid diagnosis (Iheanacho et al., 2017). Hematological responses of fish to xenobiotics vary with the toxicant, exposure time, and biological factors such as species, age, and size (Ahmed et al., 2020), and may represent adaptation, damage, or both (Witeska et al., 2023). Given that plant-derived bioactive compounds can act as xenobiotics in aquatic systems, these haematological parameters, alongside behavioral responses, are therefore critical for evaluating sub-acute toxic effects of *Senna occidentalis* ethanol leaf extract on *Clarias gariepinus.*

2 Materials and Methods

2.1 Experimental site

The study was conducted at the Fish Hatchery Complex, Aquaculture and Fisheries Management Department, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria (FUNAAB).

2.2 Collection of juveniles of *Clarias gariepinus*

A total of one hundred and eight (108) juveniles of *Clarias gariepinus* with an initial average body weight of 16 ± 2 grams and length of 8.5 ± 0.5 cm were obtained from Path Farm, Sagamu, Remo, Ogun State, Nigeria, and transported in a 50-liter keg to the Fish Hatchery, FUNAAB.

2.3 Acclimatisation of the *C. gariepinus* juveniles

The *C. gariepinus* juveniles were acclimatised for two weeks; in that period, they were fed 1.8 mm imported Skretting feed, which contained 45% crude protein, twice a day, in the early morning and in the evening. Feeding was stopped 48 hours before the beginning of the experiment, and wastes and wasted feed were taken out daily along with replenishing water.

2.4 Collection and preparation of *Senna occidentalis* leaves

The leaves of *Senna occidentalis* were obtained from Old Bola Ahmed Tinubu Road, off Iju Road, Ifako-Ijaiye LGA, Lagos State, Nigeria, and authenticated by the Forestry and Wildlife Management Department, FUNAAB. Fresh leaves of S. occidentalis were air-dried for two weeks and ground using a Binatone BLS-360 1.5 L electronic blender; then 300 g of the powdered leaves were obtained and soaked in 1400 mL of ethanol and 600 mL of distilled water (70% ethanol); the solution was stirred continuously at intervals for 72 hr (Jun et al., 2012). The solution was filtered, subjected to a rotary evaporator (50 °C), and oven-dried for 24 hr at 40 °C using a low-temperature oven drier to achieve a more concentrated extract at the Lagos University Teaching Hospital (LUTH). The extract was then stored in a refrigerator using an airtight container.

2.5 Experimental design and procedure

The experiment had four treatments and three replicates, each with 9 fish per treatment tank. From the acclimatised fish, 108 juvenile catfish were randomly distributed into 12 plastic tanks with a capacity of 35 litres,