

## **Introduction**

Poultry industry plays an important role in converting animal by-product into eggs and Poultry meats, which are excellent sources of protein for man, and beside this value poultry meat is less in cholesterol than other meats (beef and mutton).

In the past, commercial broiler production in the Sudan was practiced in a very limited scale by the agricultural units and private farms.

In Sudan broiler industry was established in the seventieth of the twentieth century by the Kuwaitian and Arabian Companies.

Nutrition has a great role in poultry production. It costs seventy percent of the running cost, it must be balanced, contains all the essential contents, for maintains, growth and production. Nutrition also must have an economic feasibility.

Carbohydrates are the main source of energy in poultry diets especially sorghum which is the main ingredient in the ration (60-70%).

Broiler chickens need more metabolizable energy than other farm animals. For maintenance ration balance it's difficult to reach the optimum energy level (3000-3300 k.cal.) for broilers, because an increase in carbohydrates level may lead to a decrease in that of proteins. Oils and fats are used as sources of energy to meet higher requirements of energy needed by broilers without a negative effect on the protein level

in the diet. The oxidation of triglycerides release more energy than twice as much as carbohydrates. Addition of fats and oils to diets, beside supplying energy improves the absorption of fat-soluble vitamins (ADEK), increases the firmness, palatability of the ration and efficiency of the consumed energy (lower caloric increment). More further, it reduces the passage rate of the digesta in the gastro intestinal tract, which allows for better absorption of nutrients.

Oils or fats (vegetable or animal) are esters of glycerol, fats are solid, whereas oils are liquids at room temperature. Most lipids (oils and fats) contain the essential fatty acids for chicken requirements such as linoleic, linolenic and arachadonic acids **Allam (2000)**. Fats also supplement essential fatty acids that are required by poultry to synthesize some hormones like prostaglandin **Gurr and James (1980)**. The energetic value of oils and fats depends on many factors such as the length of the carbon chain, the number of double bonds, the presence or absence of ester bonds (triglycerides or free fatty acids), the specific arrangement of the saturated and the unsaturated fatty acids on the glycerol backbone, the composition of diet, the quality and the type of the triglyceride supplemented in the diet, the intestinal flora, the sex and the age of the birds. **Ferrira (1999)**.

The objective of this study is to determine the effective of dietary animal fat (beef tallow) and dietary plant oil (cotton seed oil) on broiler chickens performance, carcass characteristics, blood serum and tissue meat cholesterol, and

evaluate the economic efficiency of using fats and oils in broiler chicken diets.