

Preliminary Studies on Laboratory Evaluation of the Chromic Oxide as Novel Marker for Estimating *in situ* the Faecal Production in the Flamingo Physiology (Aves: Phoenicopteridae)

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Introduction

Many of the activities of an animal are oriented towards the procurement of food (Thorington, 1970). According to Simmons (1970), food supply plays an important role in determining a species breeding biology, dispersion pattern and social system through natural selection.

Food is a biological need of every animal and an adequate supply of food is basic to its survival. Its availability in plenty throughout when they are awake - be it during day or night depending on the Avian's habit - is all the more necessary in the case of birds because they are warm - blooded and have a high metabolic rate. Although most birds give only animal food to their young, adult birds live on all kinds of food, of either vegetable or animal origin.

By observing the wide variety of beak shapes and sizes of various species of birds, it is possible to guess with some accuracy the wide variety of food upon which they live. The type of beak corresponds to the feeding requirements of a species. It can therefore be concluded that the shape and structure of a bird's bill are the best indications of the kind of food it eats.

The role of properly managed foraging ground in maintaining the animal population to give the maximum returns at the lowest cost has always been recognised, the correct assessment of the quality of food in the form they are actually eaten has not been possible due to lack of any reliable method. The progressively changing chemical, physical and botanical characteristics of the feed that according growth and the tendency of the animals to eat selectively pose additional problems. Recognition of such facts, which recent years led researchers in the field of Avian Husbandry to propose a number of markers like Silica, Iron oxide, Chromic oxide, Polyethyleneglycol, Lignin, Chromogen(s) and Nitrogen, etc., which would permit an indirect measurement of the quantity and quality of feed eaten by the animals since the amounts of nutrients ingested by animals during feeding and the extent to which these meets their requirements is of obvious importance. A review of literature reveals that no such type of research work in Avian Physiology under controlled conditions was initiated. The present investigation which is the first report to study the Chromic oxide as external Novel Marker for estimating the faecal production in the Lesser Flamingo (*Phoenicopus minor* Geoffroy).

Morphological Adaptationfs of Flamingos for Feeding

The Lesser Flamingo, *Phoenicopus minor* (Geoffroy) feeds on *Cyanophyceae* (Blue-green algae), *Spirulina subsalsa* (Corst ex. Gomont) by filtering water through lamina (tiny hair-like filters) in its beak. It feeds on the top three inches of water. The Lesser Flamingo has such a dense filter that it can shift out single - celled plants less than two hundredths of an inch in diameter.

Materials and Methods of Study

The following materials were used in the Aviary, in the Flamingo Research Station, Ajmer for the laboratory study :

maximum / minimum thermometer, hygrometer, *ph* meter, salinity meter, sieve shaker, Whatman filter papers and fading and weather testing apparatus porcelain and glass apparatus, plastic cisterns, nylon filter mesh clothes, water sanitizer, and containers insulated boxese and water testing equipments.

Method of Study

The faecal production in the grazing animals estimation based on the Chromic oxide Marker (Gupta, 1962) was used. For the determination of faecal output Chromic Oxide (Cr_2O_3) Marker added externally to the *Spirulina* water, which is the Lesser Flamingo's main feed and dosed with 5 gm. Cr_2O_3 (Chromic Oxide Marker) per day in captivity under absolutely sterile conditions. Chromic oxide marker (Cr_2O_3) have a high potential value for the estimation of faecal outgo, which is a pre-requisite to the measurement of dry matter intake of filter feeder birds.

Results

The present observation are summarised as follows:

Lesser Flamingos eat an estimated 60 gm (2.1 oz.) dry weight to fulfill their daily requirements.

It was observed that percentage, recovery of the Marker Chromic oxide (Cr_2O_3) in faecal varied from day to day. The average recoveries ranged from 101.02 ± 1.02 to 113.11 ± 4.29 percent on the sixth day and first day respectively. The above observations are reported for the first time in Avian Physiology.

The investigations revealed that the average recoveries ranged from 101.02 ± 1.02 to 113.11 ± 4.29 percent on the sixth day and first day respectively in the Lesser Flamingo. The above findings indicate that the Chromic Oxide (Cr_2O_3) high potential Marker may be used for the faecal output determination measurement of dry matter intake in the Lesser Flamingo with dose of 5 gm per day up to sixth day with *Spirulina* (Blue green algae feed).

Evidently it may also be expected that the concentration of Cr_2O_3 in the faecal grab samples at 7 a.m. and 4 p.m. and compounded on an equal wet weight basis would also give an estimate of faecal output in Lesser Flamingo also within reasonable limits of accuracy.

References

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