

EXPERIMENTATION ON FEEDING OF AN ALGA, *SPIRULINA* AND ED₅₀ DETERMINATION FOR A FISH, *HETEROPNEUSTES FOSSILIS*

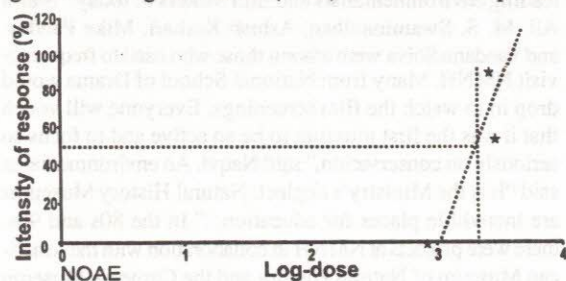
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Spirulina, filamentous cyanobacterium (blue-green alga) has a long history of use as food. Its name derives from the spiral or helical nature of its filaments. Current production of *Spirulina* worldwide is estimated to be about 3,000 metric tons. Sold widely in health food stores and mass-market outlets throughout the world, *Spirulina*'s safety as food has been established through centuries of human use and through numerous and rigorous toxicological studies. Early interest in *Spirulina* focused mainly on its rich content of protein, vitamins, essential amino acids, minerals, and essential fatty acids. *Spirulina* is 60-70% protein by weight and contains a rich source of vitamins, especially vitamin B₁₂ and provitamin A (β -carotene), and minerals (see Belay & coworkers, 1994, 1996, 1997).

The Asian stinging catfish or fossil cat, *Heteropneustes fossilis*, is a species of air sac catfish found in India, Bangladesh, Pakistan, Nepal, Sri Lanka, Thailand, and Myanmar. It is highly preferred in Assam and locally known as singhi. *H. fossilis* is found mainly in ponds, ditches, swamps, and marshes, but sometimes occurs in muddy rivers. It can tolerate slightly brackish water. It is omnivorous. This species breeds in confined waters during the monsoon months, but can breed in ponds, derelict ponds, and ditches when sufficient rain water accumulates. It is in great demand due to its medicinal value. The stinging catfish is able to deliver a painful sting to humans. Poison from a gland on its pectoral fin spine has been known to be extremely painful. This species grows to a length of 30 cm (12 in) TL and is an important



component of local commercial fisheries. It is also farmed and found in the aquarium trade.

Effective dose is the dose at which 50% animals show effect. For ED₅₀ determination of spirulina, the fishes were divided into four groups (I, II, III and IV). Each group consisting of 4 individuals. Different doses of spirulina were administered to fishes of each group. The standard solution of spirulina was prepared fresh daily and prepared by diluting it with distilled water. The effectiveness was noted after 96 hours in all the groups. The dose at which 50% effectiveness occurred was noted. The doses were converted mg to μ g and then to log dose and then graph was plotted. The calculation of ED₅₀ was done by Thompson (1947) & Weil (1952) method, which is most efficient, accurate and shortest way to calculate effective dose. The doses are converted to logarithms and other values obtained from table (Weil, 1952) and then a graph was plotted in which concentration (first converted mg to μ g and then to log dose) is on X-axis and on Y-axis % of response. ED₅₀ was calculated by the formula

$\log ED_{50} = \log D_a + d (f+1)$

D_a = lowest dose

d = log of constant rates between dosage level = 0.30103

f = from table (which require r, n, k)

n = number of animals at particular level

k = number of doses 1 [(i.e. 4-1) = 3]

r = number of animals affected at particular level.

Table 1. ED₅₀ of Spirulina against *Heteropneustes fossilis*.

Experimental material	(μ g/L)	'r' values	ED ₅₀ (μ g/L)
Spirulina	15, 30, 45, 60	1, 3, 5	9.51

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