Development of Fish Feed Using Marigold Petals and Banana Peel to Enhance the Coloration of Koi Carp (*Cyprinus carpio*)

S.L. Sachintha, A.C.W.W.M.C.L.K. Coswatte and B.V.A.S.M. Bambaranda

Department of Animal Science, Faculty of Animal Science and Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka

Koi is an economically important fish variety because of the wide diversity of skin color patterns. Fishes are unable to synthesis carotenoids in their body. The culture of ornamental fish without supplementation of dietary carotenoids leads to fade coloration. But synthetic carotenoids are expensive. Marigold petals (*Tagetes erecta*) and banana peels (*Musa acuminata*) are inexpensive, abundant, rich in carotenoids, and discarded as wastes. The objective of this study was to develop a suitable color enhancing fish feed and enhance the skin color of Koi carp by using natural color pigments. An experiment was carried out for nine weeks to enhance the body coloration of Koi carp under laboratory conditions. Four weeks old, 252 Kohaku fish were randomly introduced into seven treatments with triplicates. Marigold petals and banana peels were sun-dried, ground into fine particles, and sieved. Color enhancing diets were prepared with different concentrations (5, 10, 15%) of sun-dried marigold petal powder and banana peel powder; with the control treatment; commercial fish feed. All seven feed types were analysed for crude protein, crude lipid, ash, and moisture. Feed samples were checked for changes in physical properties at room temperature and refrigerated conditions (4 ºC) for one month. The total carotenoid concentration of all diets was measured using a UV spectrophotometer. The color analysis of the fish skin was done by a photographic method using Image J software. After 9 weeks from feeding, maximum skin coloration of Kohaku fish was achieved by the feed incorporated with 15% Marigold petal powder and 15% banana peel powder with significantly different. ($p<0.005$). Marigold petal incorporated feed obtained high skin coloration than banana peels. The lowest skin coloration was achieved in commercial fish feed. The growth rate of fish did not show any significant difference among prepared feeds during the trial. This study showed that prepared diets using Marigold petals and banana peel with different concentrations provide adequate enhancement of coloration for Kohaku fish with a short time.

Keywords: Kohaku Carp, Fish feed, Skin coloration, Marigold petals, Banana peels