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Effect of Slaughter Age on Carcass and Meat Quality of Rainbow Trout (*Oncorhynchus mykiss*)

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Abstract

In Thailand, the rainbow trout (*Oncorhynchus mykiss*) was introduced by His Majesty King Bhumibol Adulyadej of Thailand in 1969 to induce trout farming in the northern highlands as a cash income source for the hill tribe people to enable them to abandon opium poppy cultivation. In 1998, comprehensive experiments with rainbow trout were started within a DAAD sponsored subject related partnership between the Universities of Goettingen (Germany) and Chiang Mai (Thailand). Today successful brood stock management under the specific environmental conditions in the highlands of northern Thailand has been achieved at the Chiang Mai Inland Fisheries Research and Development Center (Royal Project Foundation). In the present investigation, progeny of this brood stock was reared under these specific environmental conditions, slaughtered at the age of 10 (group1), 12 (group2), and 24 months (group 3) and carcass- and meat quality of the fish was studied. The mean slaughter weight of group 1, 2, and 3 fish was 339, 500 and 1133 g, respectively. As expected, carcass parameters increased with increasing slaughter weights. The highest carcass percentage, however, was found in group 2 fish 86.48 %, ($p < 0.001$), whereas group 1 fish had the highest viscera-somatic index (VSI = 11.23, $p < 0.001$). The hepato-somatic index (HIS) did not differ significantly between the groups. The meat quality was determined in the dorsal part (DP) and ventral part (VP) of the fish muscles. The pH value measured 5 min., 45 min. and 24 hours post mortem decreased with time in both muscle portions. The lowest pH value was found in DP (6.24) and VP (6.26) in group 2 fish 24 hours post mortem. Group 2 trout showed the highest lightness of muscles (DP = 49.1; VP = 50.6), whereas group 3 fish showed the highest values for redness (DP 3.7, VP 5.5) and yellowness (DP 14.2, VP 16.1). The highest protein percentage (26.8%) and the lowest fat percentage (5.5%) were found in group 1 fish. In contrast, trout of group 3 had a lower protein percentage (20.8%) and the highest fat (14.7%) and moisture (73.8%) percentages. TBARS (thio-barbituric reactive substance) was high in older trout and after longer periods of storage (6 days). In conclusion trout of group 1 and 2 were judged more favourable due to low fat and high carcass percentages.

Keywords: Carcass, dorsal portion, aquaculture, rainbow trout, ventral portion