

Effects of ammonium derived from hot spring drainage on riverine ecosystem in the Beppu area

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In the Beppu area, large amounts of ammonium are supplied from hot spring drainage to the river systems. However, it is difficult to evaluate the effect of ammonium derived from hot spring drainage on riverine ecosystem due to a contamination of nitrate supplied from sewage. Using the stable isotopes of ammonium and nitrate, we have evaluated quantitative effects of ammonium on riverine primary producer as well as dominant fish, *Oreochromis niloticus* (Nile tilapia), in the Hirata and Haruki Rivers. Although majority of dissolved inorganic nitrogen was dominated by nitrate in the Hirata River, ammonium supplied from hot spring drainage was most important nitrogen source for attached algae as well as Nile tilapia. Contribution rate of ammonium on algal assimilation reached to around 65%. On the other hand, attached algae assimilated 96% of nitrate derived from sewage in the Haruki River, because there was little influence of hot spring drainage.

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