参考資料1

実環境水で生態影響があるという実験結果

河川の藻類生産に及ぼす除草剤の影響評価

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Assessment of the Overall Herbicide Effects on Algal Production in the River

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Abstract

Effects of overall herbicide toxicity on primary production were investigated by an algal growth test using *Selenastrum capricornutum* (Chlorophyceae) with water samples collected from a sampling station in the R. Kokai from April to August, 1991. Bacteria were eliminated from the water samples before the test, and extra N (33 $mg \cdot l^{-1}$) and P (5.38 $mg \cdot l^{-1}$) were added. The concentrations of 8 kinds of herbicide were analysed simultaneously. Growth of *Selenastrum* was inhibited significantly in the water samples from early May to late June by several of the herbicides. The most serious inhibition in mid-May was attributed to the joint toxicity of butachlor and pretilachlor. The sequential growth inhibition from the end of May to late June was attributed mostly to simetryn, although combined effects of several other herbicides were slightly recognizable at the end of May.

Periphyton which formed on the artificial substrates was also affected, judging from the number of species as well as the rate of accumulation, possibly by several kinds of herbicide from mid-May to mid-June, when the growth of *Selenastrum* was inhibited in the river water samples. These results suggest that algal production in rivers may be affected by herbicides at least in the period from May to June.

Key words: herbicides, effect, *Selenastrum* bioassay, algal production, algal community structure

1. 緒　　言

淡水産のヌカエビ（*Paratya compressa improvisa*）は殺虫剤に感受性が高く（HATAKEYAMA and SUGAYA, 1989; SUZUKI *et al.*, 1991），それを試験生物として河川水中の殺虫剤を主体とする毒性の変動を明らかにした（HATAKEYAMA *et al.*, 1991; 畠山ら，1991）。しかしヌカエビは除草剤には比較的感受性が低く（HATAKEYAMA and SUGAYA, 1989）河川水中に低濃度で検出される除草剤に対し4日間の生物試験ではそれらの毒性を評価できなかった。つくば市内などの調査から河川水は5月から6月下旬にかけ多種類の除草剤で汚染されていることがわかった（岩熊他，1988; 畠山他，1991）。これら除草剤が河川の藻類生産に及ぼす潜在的影響を評価するため緑藻類の *Selenastrum capricornutum* を用い，本種の河川水中における増殖試験を4月から8月まで行った。また河川水中に検出された除草剤について，単独または複数種の除草剤の *Selenastrum* の増殖に対する影響を試験し，藻類増殖に対する除草剤の複合影響を評価した。*S. capricornutum* はOECDの生態影響試験やAGP試験の標準種としても使用されている。

Selenastrum の増殖試験と並行して調査定点