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A novel approach to identify multiple stressors to *Pseudorasbora parva* by AFLP analysis

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Most of criteria for chemical compounds in aquatic ecosystem are based on their acute toxicity. But it will be more important to evaluate the effects of long-term, low-level chronic exposure of populations by multiple stressors and to identify causative stressors among multiple stressors for the conserving or restoring many populations in aquatic ecosystem.

This study presents a novel approach to identify multiple stressors to *Pseudorasbora parva* by AFLP analysis. AFLP analysis is a very useful technique to reveal genetic diversity in natural populations with a little quantity of each sample (therefore, we don't have to sacrifice fish.). Genetic studies have been conducted on a few species of vertebrates exposed to environmental pollution and demonstrated genetic damage by chronic chemical exposures. We consider the possibility to reveal causative stressors by fingerprints of amplified fragment length polymorphism of individual fish. We apply AFLP analysis to *Pseudorasbora parva*, which can live in various river and lakes, even contaminated ones in Japan.

At first, we reveal the conditions and reproducibility of AFLP analysis to three organs in *Pseudorasbora parva* to select best organs for analysis and stressors identification.

Thereafter, we apply AFLP analysis to *Pseudorasbora parva* which were captured in some special rivers and lakes which are considered to be contaminated mainly only by wastewater from factories, sewage treatment plant or agricultural effluent. We also analyze chemical contamination level of the sampling sites, for example PAHs and heavy metals. From these data about chemical compounds and AFLP analysis, we classify amplified fragment length patterns into several groups based on contamination source properties.