

## 養殖トラフグの腸内細菌相

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### Short Paper

#### The Intestinal Microflora of Cultured Specimens of a Puffer *Fugu rubripes rubripes*

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As previously reported,<sup>1)</sup> we examined the intestinal microflora of a toxic species of puffer *Fugu vermicularis vermicularis*, and found that a dominant bacterium *Vibrio alginolyticus* produced tetrodotoxin (TTX) and related substances. Incidentally, more than 100 cultured specimens of another toxic puffer species *F. rubripes rubripes* were all nontoxic.<sup>2)</sup> This situation aroused us to undertake the present study.

Three specimens (133 to 164 g in body weight) of the puffer *F. rubripes rubripes*, which were hatched and cultured at the Shirahama Fisheries Laboratory, Kinki University for several months, were used as the materials.

The liver and intestinal contents were excised from each specimen, as reported previously.<sup>1)</sup> Each liver was assayed for lethal potency. Intestinal contents of each specimen were placed in a test tube, serially diluted, and inoculated onto PYBG, 1/20 PYBG, N-PYBG, BTB-Teepol, MPEA and MAGPC media.<sup>3)</sup> The inoculated media were incubated at 20°C for 10 days under aerobic and anaerobic conditions. After incubation, bacterial colonies were isolated and identified at generic level.<sup>3)</sup> *Vibrio* strains were classified into nine groups by the abilities: to swarm on solid agar; to form a yellow colony on TCBS agar (Eiken); to produce indole; and to produce acids from arabinose.

All the specimens were confirmed to be nontoxic (<5 MU/g liver). TVC values were from 10<sup>6</sup> to 10<sup>7</sup> g<sup>-1</sup>. As shown in Table 1, eight groups of the genus *Vibrio*, along with *Pseudomonas*, *Moraxella*, *Acinetobacter* and *Bacteroidaceae*, were detected in the intestinal contents at densities ranging from 10<sup>2</sup> to 10<sup>6</sup> g<sup>-1</sup>. Bacteria of *Vibrio* group 1, tentatively identified as *V. alginolyticus*, were detected at densities from 10<sup>4</sup> to 10<sup>6</sup> g<sup>-1</sup> in all specimens, which reminded us of the

**Table 1.** Generic composition of the intestinal bacteria of cultured *F. rubripes rubripes* specimens

Genera	Viable counts (log No. g <sup>-1</sup> )			
	Specimen No.			
	1	2	3	
<i>Vibrio</i> group	1	6.08	5.41	4.92
	3	nd*	5.41	nd
	4	nd	nd	4.32
	5	5.15	5.74	nd
	6	5.78	5.56	nd
	7	5.98	5.56	4.91
	8	6.68	6.23	5.58
	9	6.26	6.11	5.76
	<i>Pseudomonas</i>	6.08	6.04	6.04
<i>Moraxella</i>	5.78	6.34	4.61	
<i>Acinetobacter</i>	6.08	6.70	6.23	
<i>Bacteroidaceae</i>	nd	2.30	2.30	
TVC	7.08	7.12	6.60	

\* Not detected.

the microfloras of some toxic puffer species as reported previously.<sup>3)</sup>

The present results may indicate that either none of *Vibrio* strains detected here was endowed with TTX-producing ability, or cultured puffer does not adsorb nor accumulate TTX, or it decomposes TTX which once adsorbed. Studies along those lines are now in progress.

#### References

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