Carryover of CH3Hg from feed to sea bass and salmon

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**Model.** Fish concentration ($C_{fish}$) as a function of feed uptake, elimination ($k_E$) and growth dilution ($k_G$), where uptake depends on feed concentration ($C_{feed}$), assimilation ($\alpha$) and feeding rate ($F$). From fish and feed weight ($w$), specific growth rate (SRG) and feed conversion rate (FCR) are calculated.

$$\frac{dC_{fish}}{dt} = \alpha \cdot F \cdot C_{feed} - k_E \cdot C_{fish}$$

FCR = $w_{feed \text{ consumed}} / \Delta w_{fish \text{ gained}}$  \hspace{1cm} [1]

$$k_G = \text{SGR} = (\ln w_t - \ln w_0)/ t$$  \hspace{1cm} [2]

$$C_{fish \text{ growth corrected}}(t) = C_{fish} \cdot (1 + k_G \cdot t)$$  \hspace{1cm} [3]

$$\ln (C_{fish}-C_{fish, \text{ control diet}}) = \text{constant} - k_E \cdot t$$  \hspace{1cm} [4]

$$C_{fish}(t) = \frac{\alpha \cdot F \cdot C_{feed}}{k_E} \cdot (1 - \exp (k_E \cdot t))$$  \hspace{1cm} [5]

**Conclusion.** Toxicokinetics were modeled. Feed with low levels of CH$_3$Hg (41-75 ng/g) showed assimilation ($\alpha$) close to 100% and low elimination ($k_E$). Similar results for all diets.

<table>
<thead>
<tr>
<th>Diets</th>
<th>C$_{feed}$</th>
<th>k$_E$</th>
<th>$\alpha$</th>
<th>k$_E$</th>
<th>$\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Spiked plastic</td>
<td>64</td>
<td>$-4 \cdot 10^{-3}$</td>
<td>0.69</td>
<td>$1 \cdot 10^{-3}$</td>
<td>1.04</td>
</tr>
<tr>
<td>2) Spiked oil + clean plastic</td>
<td>74</td>
<td>$1 \cdot 10^{-4}$</td>
<td>0.98</td>
<td>$-4 \cdot 10^{-4}$</td>
<td>0.96</td>
</tr>
<tr>
<td>3) Spiked oil</td>
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<td>0.84</td>
<td>$2 \cdot 10^{-4}$</td>
<td>1.08</td>
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<td>4) Control</td>
<td>41</td>
<td></td>
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</tbody>
</table>