**Effect of short-chain fructo-oligosaccharides supplementation on performance and gut health of pigs.**

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**Introduction**

Increasing litter size leads to
- higher preweaning mortality
- higher incidence of less resilient low birth weight (LBW) piglets

**Experimental set-up**

Control (CON)  
Treatment 1 (T1)  
Treatment 2 (T2)

- d0, birth  
- d7  
- d 21.5 weaning  
- d 36.5 (xanthenas (9 pigs/group)

**Results**

**Growth performance and mortality**

<table>
<thead>
<tr>
<th>Item</th>
<th>CON</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BW</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>ADG</td>
<td>1.86 ± 0.00 (31)</td>
<td>1.86 ± 0.00 (31)</td>
<td>1.86 ± 0.00 (31)</td>
</tr>
<tr>
<td>BW at d 0</td>
<td>1.64 ± 0.00 (31)</td>
<td>1.64 ± 0.00 (31)</td>
<td>1.64 ± 0.00 (31)</td>
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<tr>
<td>BW at d 7</td>
<td>2.27 ± 0.04 (46)</td>
<td>2.16 ± 0.07 (47)</td>
<td>2.14 ± 0.08 (46)</td>
</tr>
<tr>
<td>BW at d 21.5</td>
<td>5.89 ± 0.00 (51)</td>
<td>5.86 ± 0.17 (50)</td>
<td>5.86 ± 0.17 (50)</td>
</tr>
<tr>
<td>BW at d 36.5</td>
<td>9.4 ± 0.00 (51)</td>
<td>9.1 ± 0.00 (51)</td>
<td>9.1 ± 0.00 (51)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>SE</th>
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<tbody>
<tr>
<td>Mean</td>
<td>22.6 ± 13.2</td>
</tr>
</tbody>
</table>

**Microbiota and metabolic profile**

- scFOS treatment had no effect on the relative abundance of several taxa commonly associated with fiber consumption.
- Bacteroides seems to be temporarily reduced by scFOS supplementation in the first week of life.
- Alloprevotella seems increased in the scFOS treated group.
- The total concentration of SCFAs was unaffected by scFOS (P = 0.22).
- None of the individual SCFAs differed between the treatment groups (acetate P = 0.49, propionate P = 0.67, butyrate P = 0.32, valerate P = 0.82).

**Intestinal permeability and structure**

- The Papp of FD4 did not differ between treatment groups (P = 0.96).
- Villus length (red bar) was not affected by scFOS (P = 0.62).
- Crypt depth (blue bar) was not affected by scFOS (P = 0.52).
- The density of intra-epithelial lymphocytes (IELs) (yellow dot) was not affected by scFOS supplementation (P = 0.94).

**Conclusion:**

The supplementation of a low dose of short-chain fructooligosaccharides to healthy piglets improved their survival without explicitly affecting gut health. The supplementation of (higher dosages) of scFOS to underprivileged piglets seems promising in increasing their resilience.