

# Palatability of a synthetic diet in mink (*Mustela vison*)

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## Introduction

In investigations that require exact control of dietary compositions, a diet mixed from crystalline amino acids has been applied (Sandbol et al., 2007). However, in some trials dietary intake was low and fluctuating (Blaesbjerg et al., 2008). Previously, Hvam et al., (2006) showed that 'taste enhancers' increased the dietary intake of the mink. In the further development of the synthetic diet, two trials were conducted. In trials, especially running for longer periods, a semi-synthetic diet might be required.

The purpose of Trial 1 was to determine the effect of increasing dietary levels of chicken breast on feed intake. In Trial 2, the purpose was to examine the effect of pH on feed intake by comparing a chicken breast-based semi-synthetic diet with a pH-regulated synthetic diet.

## Materials and methods

### Trial 1

25 adult male mink of the colour type Brown/Glow were allocated in five groups with five mink in each group (Table 1). The chicken breasts added were found by replacing 10, 20 or 50%, on average, of the amino acids in the negative control diet with the respective amino acids originating from the chicken breasts.

pH in diets 1 – 5 were 4.10, 4.24, 4.30, 4.71 and 4.14, respectively.

### Trial 2

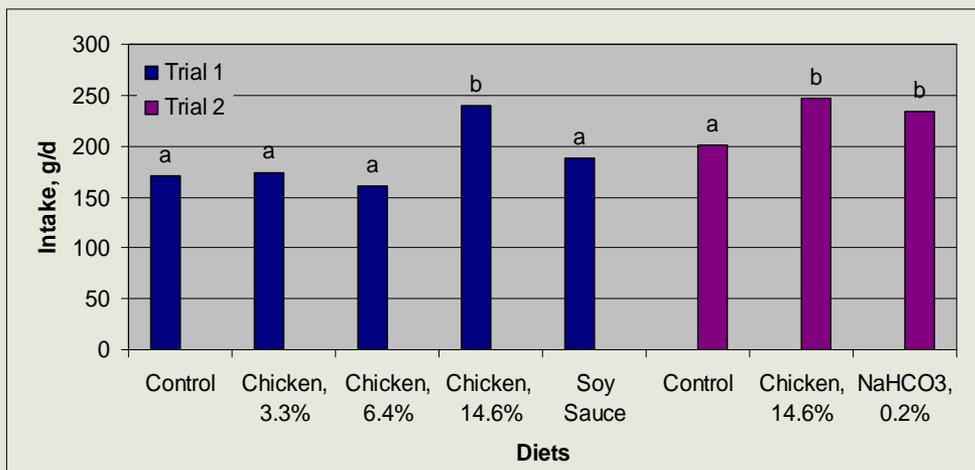
15 adult male mink of the colour type Brown/Glow were allocated in three groups (Table 1). The added amount of chicken breast was chosen from the results from Trial 1. pH in diet 2 was measured. Then pH in diet 3 was regulated to balance pH between diets 2 and 3 by addition of NaHCO<sub>3</sub>.

pH in diets 1 – 3 were 4.01, 4.74, and 4.68, respectively.

**Table 1.** Dietary contents of test ingredients (% of fresh weight)

Trial 1	1	2	3	4	5
Chicken breast	0	3.3	6.4	14.6	0
Soy sauce <sup>1)</sup>	0	0	0	0	0.8
Trial 2	1	2	3		
Chicken breast	0	14.6	0	-	-
NaHCO <sub>3</sub>	0	0	0.2	-	-

<sup>1)</sup> Kikkoman's Soy Sauce, naturally brewed.



**Figure 1** Average feed intake of a synthetic diet with increasing inclusion of chicken breast (Trial 1 ■) and of a pH-regulated diet containing NaHCO<sub>3</sub> (Trial 2 ■). Dietary pH-values in control, chicken and NaHCO<sub>3</sub> diets in trial 2 were 4.01, 4.74, and 4.68. Different letters above columns denote statistical difference within trial.

## Results

The intake of the control diet and the diet with highest level of chicken breast was steady during the 10 days in Trial 1. During the first 4 trial days, the mink ingested increasing amounts of the two diets containing low levels of chicken breast and the diet with soy sauce and then dietary intake stabilized.

However, individual daily intakes varied a great deal between mink. This variation was lower in mink offered the highest level of chicken. The intake of this diet was significantly ( $p < 0.0002$ ) higher than the intake of the other four diets (Fig. 1).

The increased dietary pH-value (Trial 2) significantly ( $p < 0.0004$ ) increased the intake of the diets compared to the negative control diet (Fig. 1).

## Discussion

Dietary intake of a synthetic diet is increased in mink when the diet is supplemented. Apparently, a broad spectrum is applicable from fish and soy sauces to pH-regulating agents and on to addition of raw chicken breasts. Which to choose will depend on the purpose of the trial in question.

However, when dietary intake was close to 100%, the mink were carrying the feed more around resulting in feed (up to 30 g), which was out of reach for the mink.

Addition of soy sauce, NaHCO<sub>3</sub>, or 14.6% chicken breast improved dietary intake up to 95% of the offered diet compared to a dietary intake between 70 - 79% of the control diet.

As addition of chicken to the diet did not increase dietary intake further than NaHCO<sub>3</sub>, dietary pH appears to be more important to palatability than addition of raw meat.

The diets were designed to meet the daily ME requirement of maintenance in mink (Glem-Hansen and Chwalibog, 1978). A constant daily dietary intake of 95% must be considered sufficient to meet the requirement when offering a synthetic diet to the mink.

## Conclusion

In conclusion, addition of 14.6% chicken or 0.2% NaHCO<sub>3</sub> increased and stabilized dietary intake of a synthetic diet offered to adult male mink.

## References

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