**Qualitative and quantitative behavioral responses in reaction to various odors in newly hatched chicks**

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**Abbreviated Title: Behavioral responses to various odors**

**Summary**

In general, birds are often expected to have a poor olfaction ability, on the contrary, they are attracted by some odors. This ability can be used to formulate an attractive feed additive, but a screening of the efficient molecules has to be done first.

Behavioral reactions of poultry were measured in newly hatched fasting birds according to the method of Porter *et al* (1999). They were exposed to an odorous stimulus using a flexible plastic container filled with 0.5 mL liquid and pressed 15 times. Control was used to test reaction to air flow. Twenty chicks were used per set of experiment. A set was made of three exposition for each animal comprising a control (soybean oil) and two odorous stimuli presented in a random order. Their reactions to the exposition to each olfactory stimulus were scored from 0 (no response) to 3 (awake and cries). Sixty pure molecules, 14 natural extracts and 21 blends were tested on broiler chicks. There were no significant effect of the chemical family (alcohol, ketone, acid, ester…) on the answer note (P>0.05). The number of carbons has a significant effect of the answer (P<0.05) with higher score for molecules with less than 8 carbons. Concerning associations, no synergistic effect was demonstrated between molecules. From these results a blend of molecules and natural extracts was selected and an answer response curve was drawn. These results are the basis of the creation of specific formulations with composition and concentration adapted to poultry to elicit attractiveness and well-being.

**Key words:**Behavioral response, odor, chicks