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## Essential oils to reduce stress impacts in chicks

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## Essential oils to reduce stress impacts in chicks

<b>Geographical location</b>	France
<b>Keywords</b>	animal husbandry poultry farming animal welfare reduce antibiotic use disease prevention
<b>Agricultural sectors</b>	Poultry
<b>Main funding source</b>	Other public (national, regional) research funds
<b>Project type</b>	Research project
<b>Starting date</b>	2021
<b>End date</b>	2021
<b>Website</b>	Article at the webpage of the INRAE ( <a href="https://www.inrae.fr/en/news/spontaneous-intake-essential-oils-long-lasting-benefits-chicks">https://www.inrae.fr/en/news/spontaneous-intake-essential-oils-long-lasting-benefits-chicks</a> )

**Title (in English):** Essential oils to reduce stress impacts in chicks

**Language:** English

### Objective of the project (native language):

Certain conditions due to management operations in chicken hatchery units, like transporting the chicks to rearing units or changes in temperature, are shown to produce stress that has a long-term impact in chicken growth. The INRAE has tested the effect of verbena, marjoram and cardamom essential oils on reducing the consequences of stress in chicks.

### Objective of the project (in English):

N/A

### Description of activities (in English):

The study divided 192 chickens in two groups. One of the two groups was subjected to stressful conditions. Both groups were divided into two subgroups, one of which had access to four drinking bottles; one containing only water and the other 3 water with one of the essential oils to be tested. The other subgroup was provided with only water.

The study showed that chicks under stress consume more water from the bottles containing water with essential oils. The chicks which were not under stress also consumed water containing the essential oils, but the quantity they consumed of the essential oil water was less.

Subsequently, the chicks' blood was tested to check changes in the expression of their genes. It was shown that male chicks under stress suffered more changes; mainly in genes related to growth such as genes

regulating cell oxidative stress, energy metabolism and bone metabolism. In females, the impact of stress was less but they still suffered changes in the expression of genes related to growth and reproduction. The consumption of the essential oils proved to attenuate gene expression changes in the long term for the chicks under stress. Chicks that were not under stress which had access to water with essential oils also showed changes in the expression of some genes, but these were different genes compared to the ones influenced in chicks under stress conditions. These results show that the addition of the tested essential oils to drinking water can reduce long term impacts of stress in chicks. This may also have benefits for reducing the incidence of diseases and thus the use of antibiotics.

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### Project coordinator

**Organization/Institution name (original language):**

INRAE - Institut national de recherche pour l'agriculture, l'alimentation et l'environnement

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**Partner category:** Researcher

### Further details

**Additional information:**

Foury A, Collin A, Helbling JC, Leterrier C, Moisan MP, Guilloteau LA. Spontaneous intake of essential oils after a negative postnatal experience has long-term effects on blood transcriptome in chickens. *Scientific Reports* 2020, 10:1-14. <https://doi.org/10.1038/s41598-020-77732-5> (<https://doi.org/10.1038/s41598-020-77732-5>)

Guilloteau LA, Collin A, Koch A, Leterrier C. Spontaneous intake and long-term effects of essential oils after a negative postnatal experience in chicks. *Front. Vet. Sci.* 2019, 6:72. doi: 10.3389/fvets.2019.00072

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