



HAL
open science

Effects of olfactory exposure to twelve Essential Oils (EOs) on behavior and health of cows with subclinical mastitis

Ralph Nehme, C. Michelet, Élise Vanbergue, Olivier Rampin, Said Bouhallab, Anne Aupiais, Latifa Abdennebi-Najar

► To cite this version:

Ralph Nehme, C. Michelet, Élise Vanbergue, Olivier Rampin, Said Bouhallab, et al.. Effects of olfactory exposure to twelve Essential Oils (EOs) on behavior and health of cows with subclinical mastitis. <https://eaap2023.org/>. EAAP + WAAP + Interbull Congress 2023, Aug 2023, Lyon, France. , 2023. hal-04194725

HAL Id: hal-04194725

<https://hal.inrae.fr/hal-04194725v1>

Submitted on 4 Sep 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License



Effects of olfactory exposure to twelve Essential Oils (EOs) on behavior and health of cows with subclinical mastitis

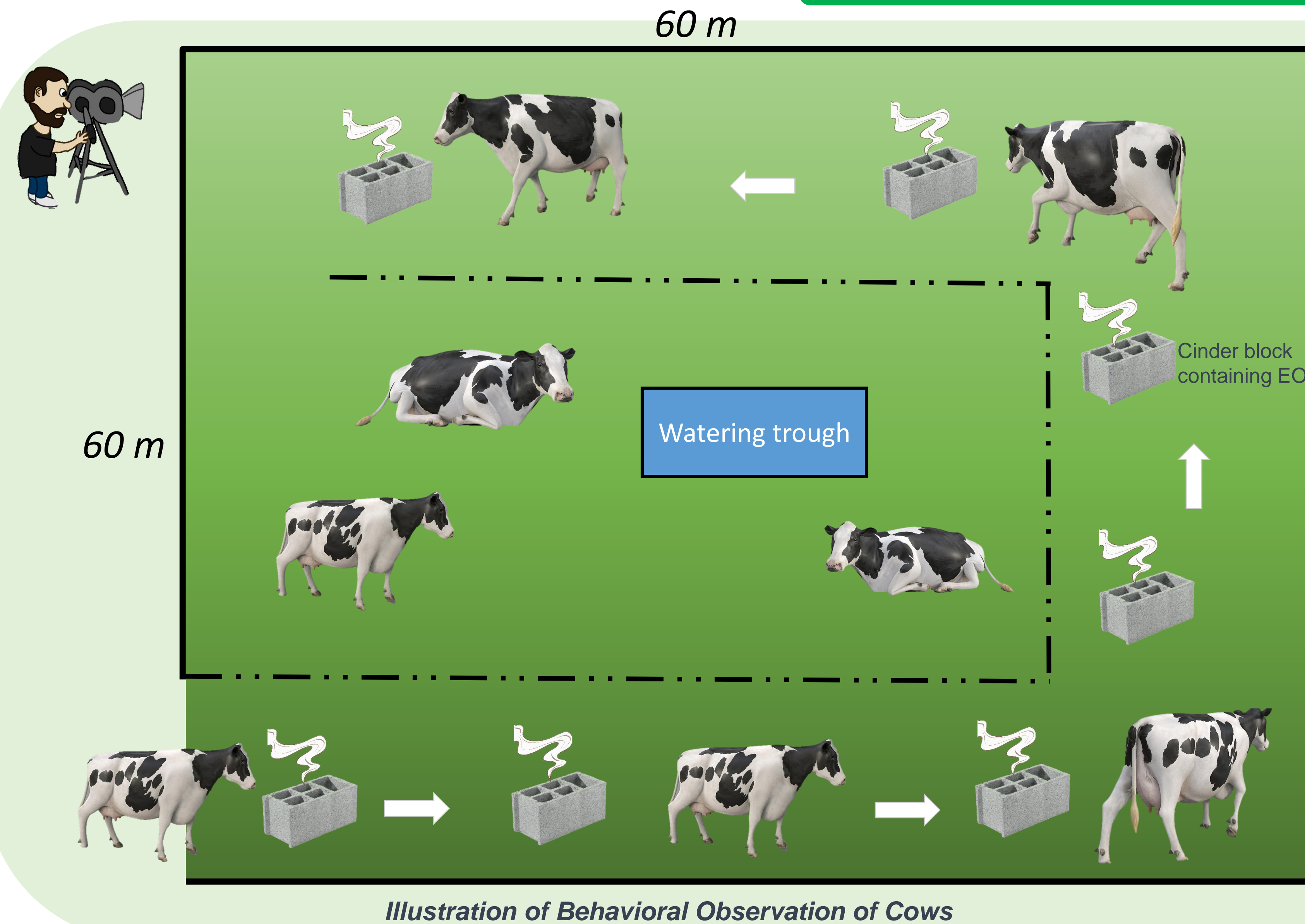
Nehme R.^{1,2}, Michelet C.¹, Aupiais A.¹, Vanbergue E.¹, Rampin O.³, Bouhallab S.², Abdennebi-Najar L.¹

1 : Quality and Health Department, IDELE Institute, Paris, France. 2 : INRAE, Institut Agro, STLO, F-35042 Rennes, France. 3 : Paris Saclay university, INRAE, AgroParisTech, PNCA, 78350 Jouy-en-Josas, France.

CONTEXT & AIM

Compared with clinical mastitis, the **subclinical form of mastitis (SM)** is more prevalent and thought to cause more **economic losses** to the dairy industry. **Antibiotics** are the primary treatment for this disease. Given their **disastrous effects** including residues and the increased resistance to some pathogens, novel **alternative approaches** based on plant aromatherapy and phytotherapy have garnered significant interest to treat SM. Nevertheless, their effectiveness against this disease remains a subject of intense scientific debate. This study aims first to record observations of cows' behavior towards an **olfactory exposure to EOs** and determine if such route of approaches is effective against SM.

EXPERIMENTAL DESIGN



➤ Protocol

- 29 Holstein cows including 19 with SM were exposed during 2 consecutive days for 2 hours to 12 Eos (8 chemical families) distributed into 12 cinder blocks
- EOs' position were modified on day 2

➤ Sampling and Analysis

- Blood, milk sampling and nasal swab
- Measurement of milk somatic cell count (SSC), nasal bacteriological composition and blood cortisol level

➤ Cows' Behavior

- Time spent to smell EOs

RESULTS

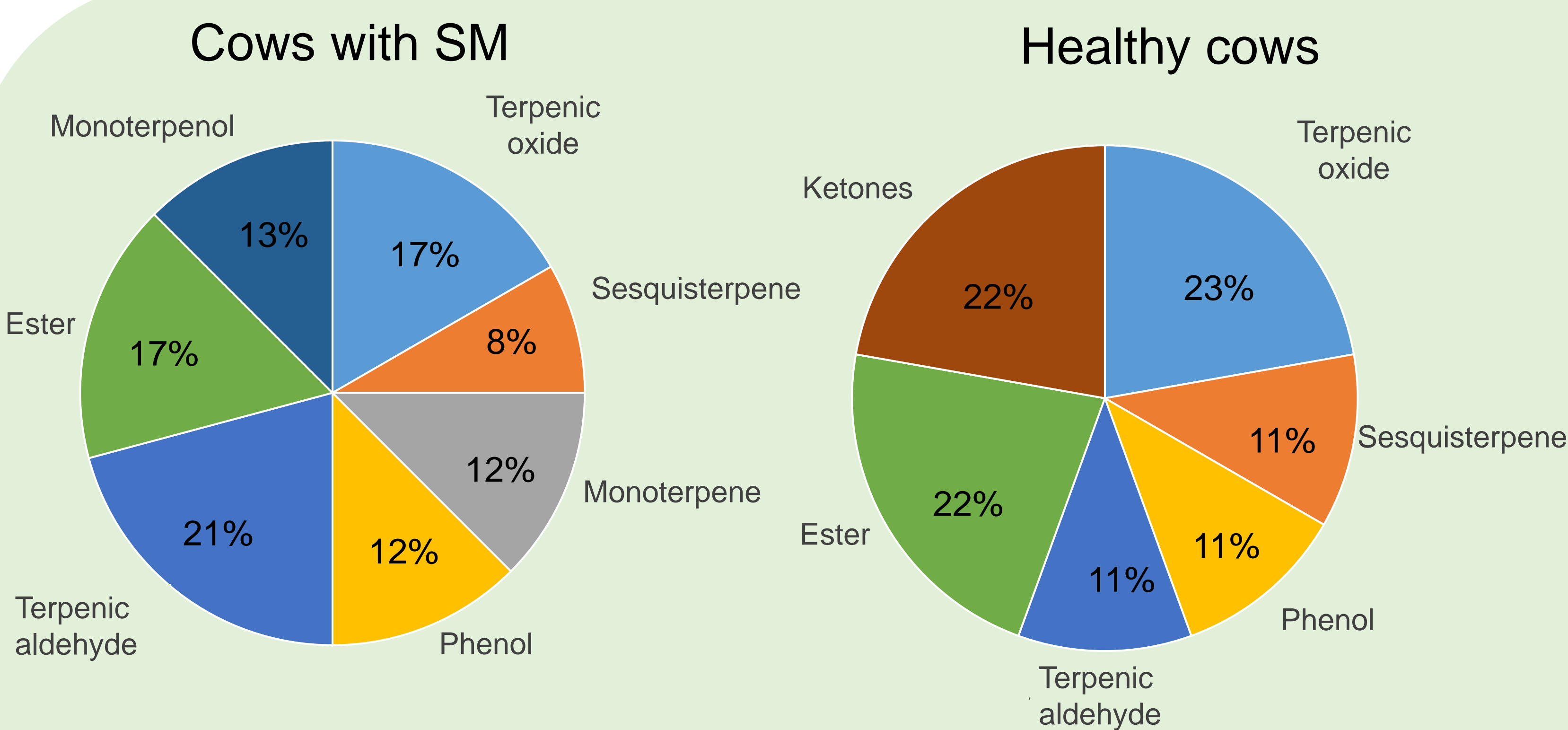


Figure 1 : Distribution of chemical families of EOs smelled by the 2 groups of cows

1. EOs' families Monoterpenol and monoterpene are exclusively sensed by cows with SM, whereas ketone family are exclusively sensed by healthy cows

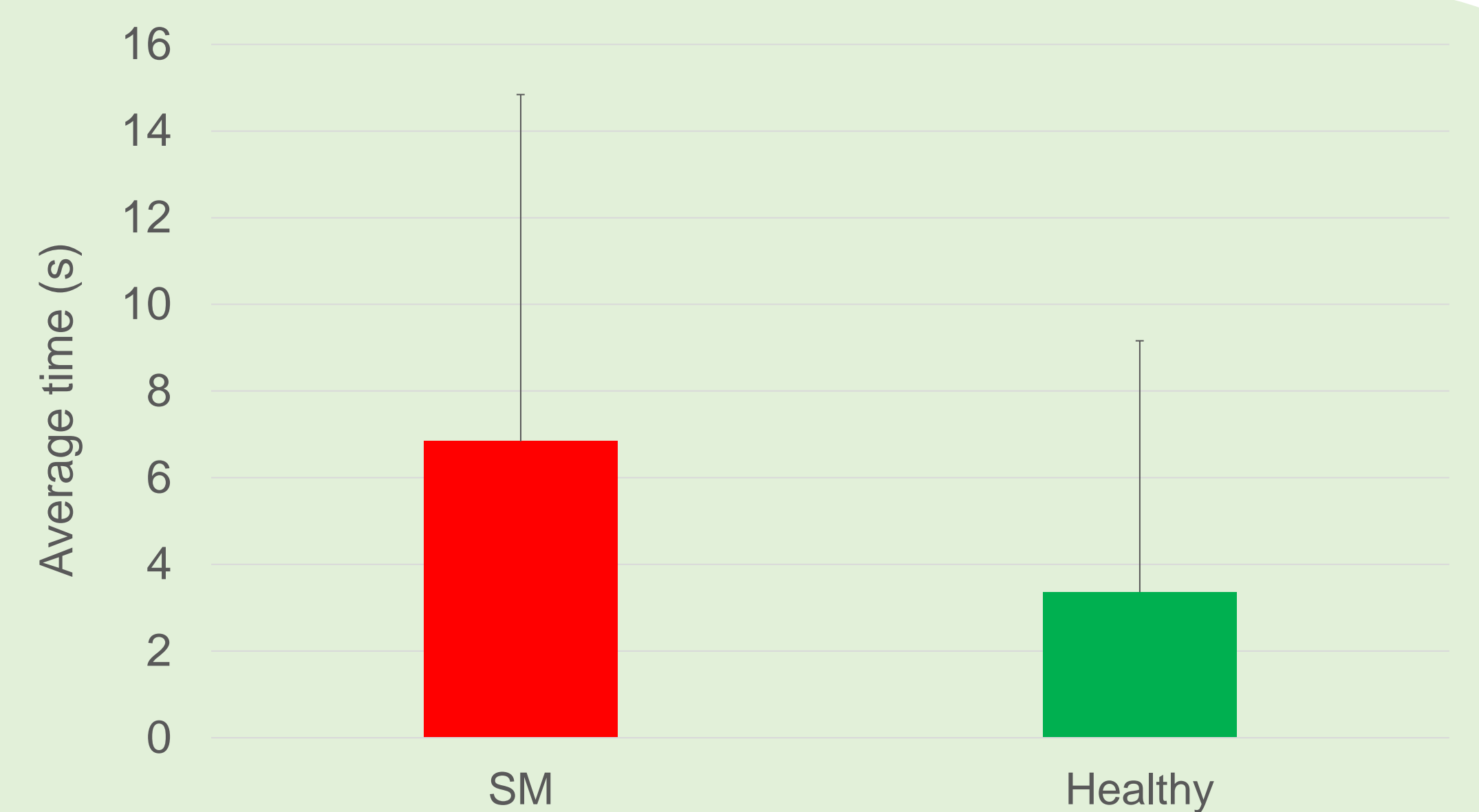


Figure 2 : Average time spent smelling EOs according to Cow's health status

2. Cows with SM show greater interest to EOs than healthy cow ($P < 0.05$).

3. While no significant differences were observed for SCC, milk composition, and bacteriology, there was a significant increase ($P < 0.05$) in blood cortisol levels following exposure to EOs for all cows

CONCLUSION

These preliminary results demonstrate that cows with SM show more interest in EOs without any direct effect on their health status. Studies are underway to determine the chemical nature of the most attractive EOs to which SM cows were attracted and their direct effectiveness. Further studies are needed before making any recommendation regarding EOs olfactory exposure route to treat SM in dairy cows.

