

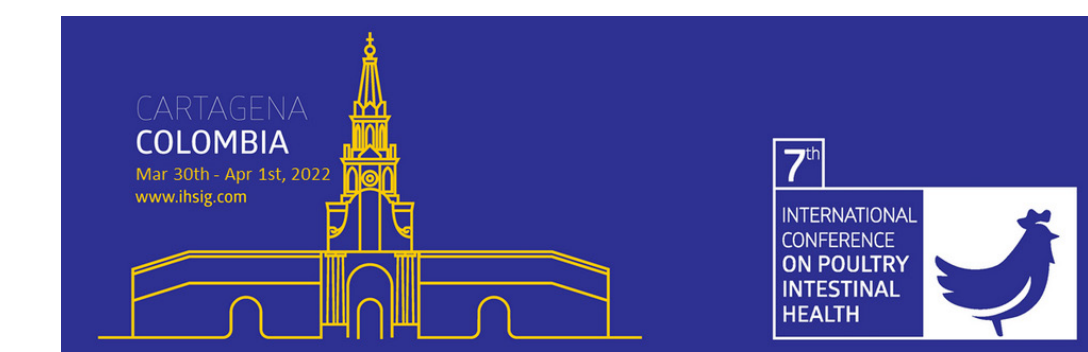
Standardized Natural Citrus Extract long term efficacy on poultry performances: The beginning of an explanation

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Introduction

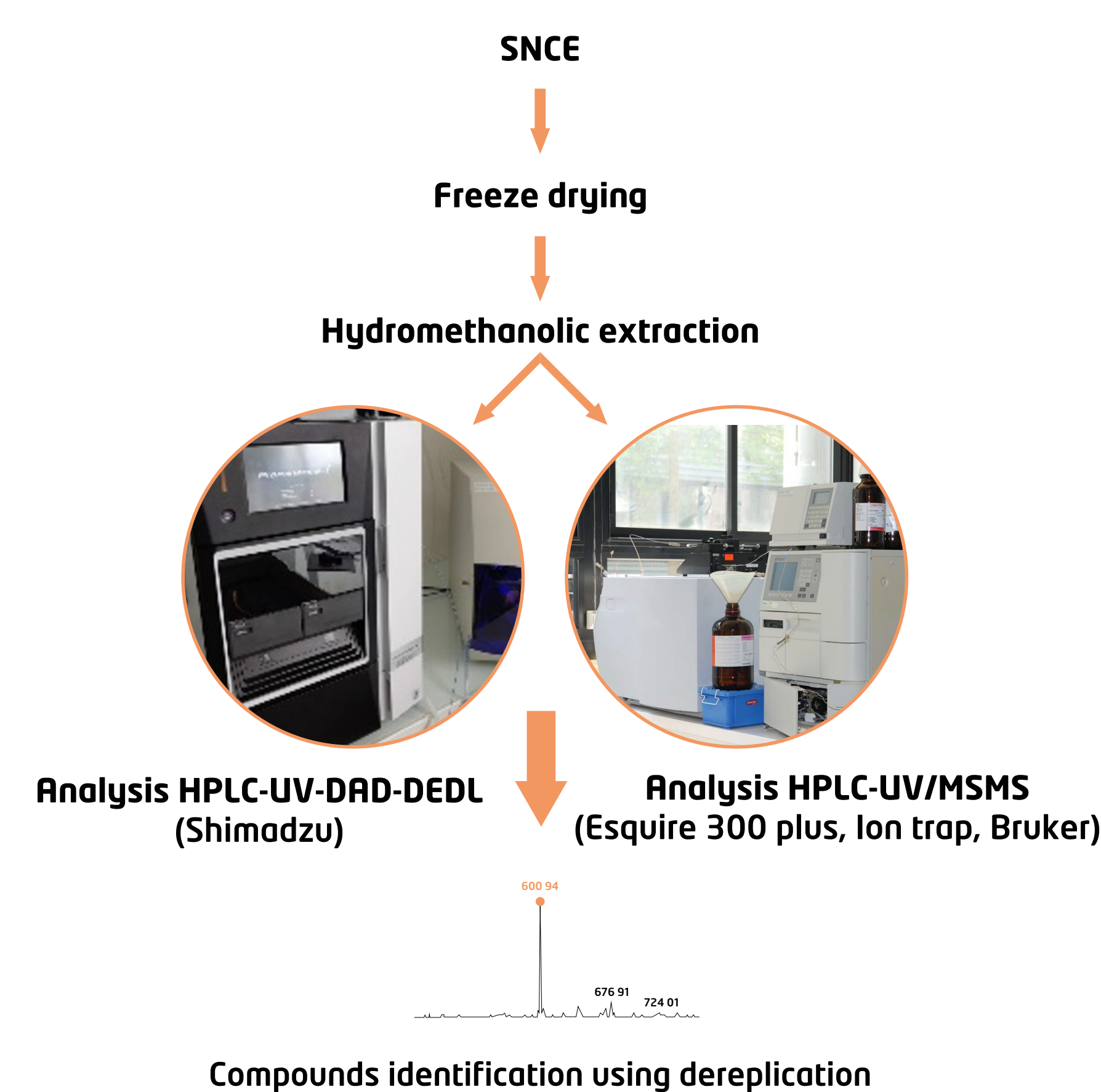
Since the ban of antibiotic growth promoters (AGPs) in animal feed, a race towards alternatives has been launched in Europe. The objective was to develop solutions to replace AGPs without compromising the growth performances of animals. Plant-based solutions are part of these alternatives. However, plant-based solutions do not always have a clear composition and the effect of their dietary supplementation can be different, probably depending on the composition and concentration of active compounds. Moreover, their mechanism of action is not always well defined. The objective of this study was to characterize a solution based on Citrus extracts and try to understand its mechanism of action to explain the beneficial effect observed on the growth of animals.

Material and methods

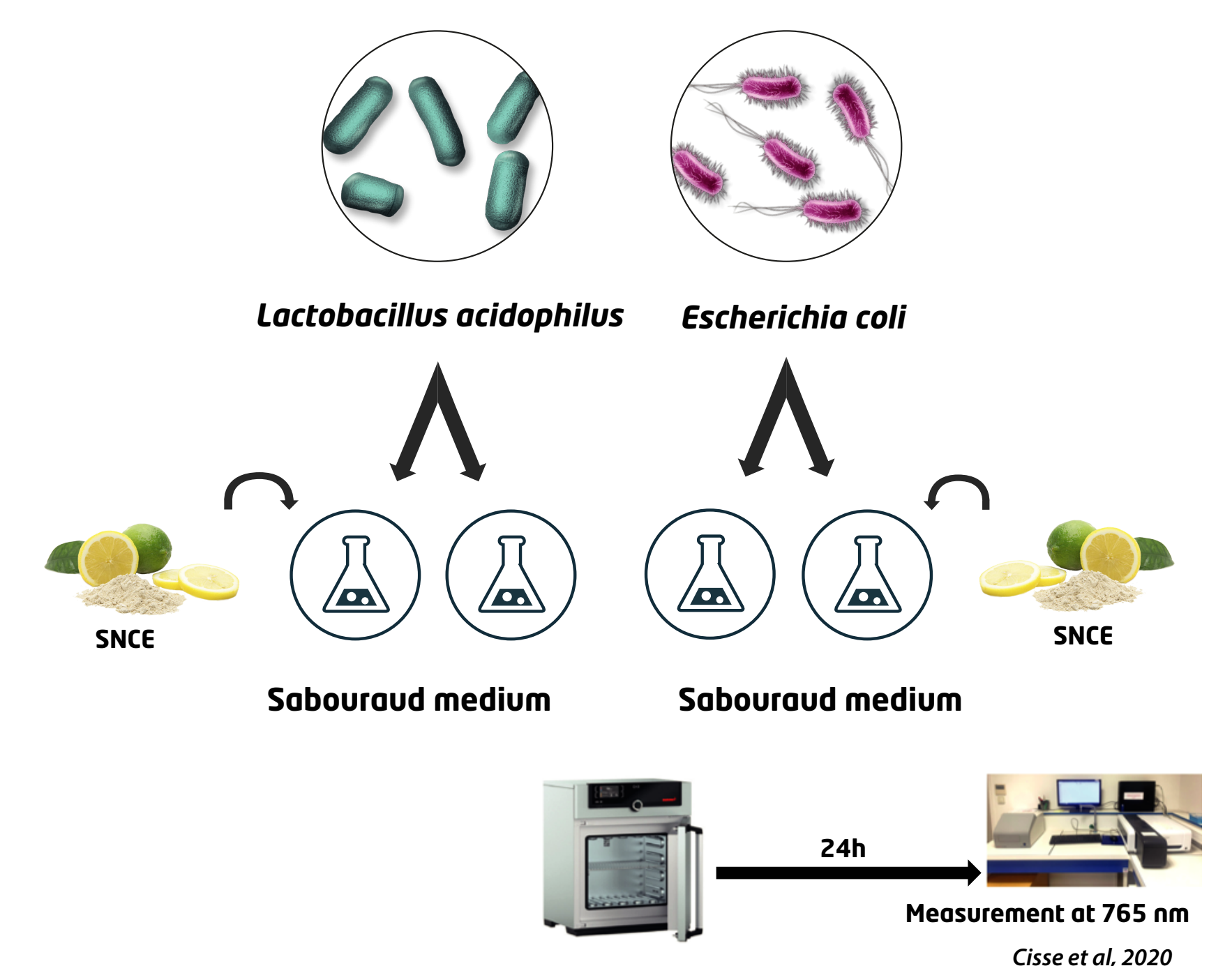
1) Meta-analysis

Trial number	Localisation	Number of poultry	Positive control
1	Danemark (Henning Fynboe Madsen's experimental farm)	160	/
2	France (research station INRA Le Magneraud)	175	/
3	Suisse (Aviforum Zollikofen)	4200	/
4	England (commercial farm)	102147	/
5	France (INRA Research Center of Tours-Nouzilly)	40	/
6	France (Commercial farm)	44800	AGP
7	France (Commercial farm)	/	AGP
8	France (Commercial farm)	150000	AGP
9	Tawain	6500	AGP (in th 2 groups)
10	Canada (Commercial farm)	/	AGP
11	Canada (Inatech International), with the suport of Agriculture and Agri-Food Canada	204	AGP
12	India (Arambagh Hatcheries Ltd)	320	AGP
13	Perou (experimental farm)	1050	AGP
14	Philippines	17254	/
15	Canada	288	/
16	France (Zootests)	360	AGP
17	Algeria (experimental farm)	360	/

2) Citrus extract characterization



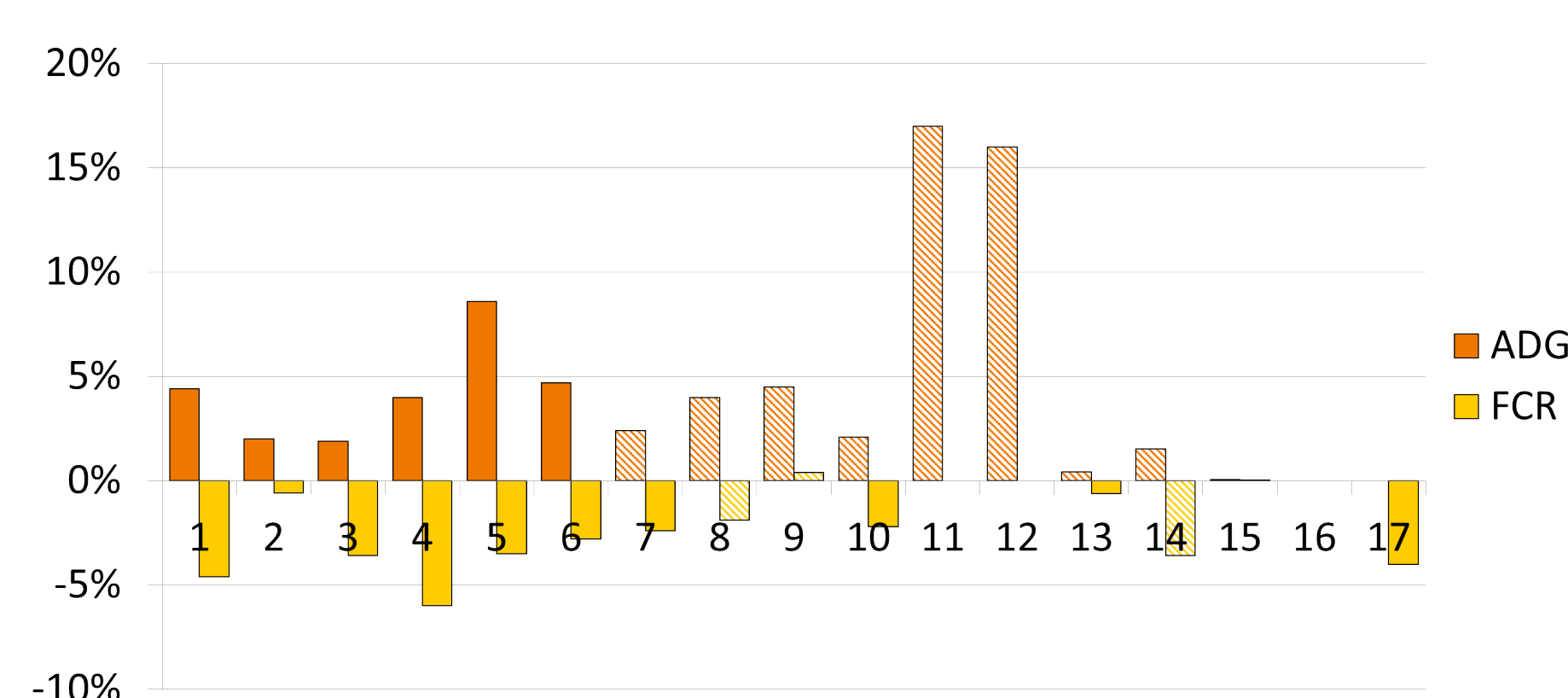
3) Citrus extract effect on bacterial growth



Results

1) Meta-analysis

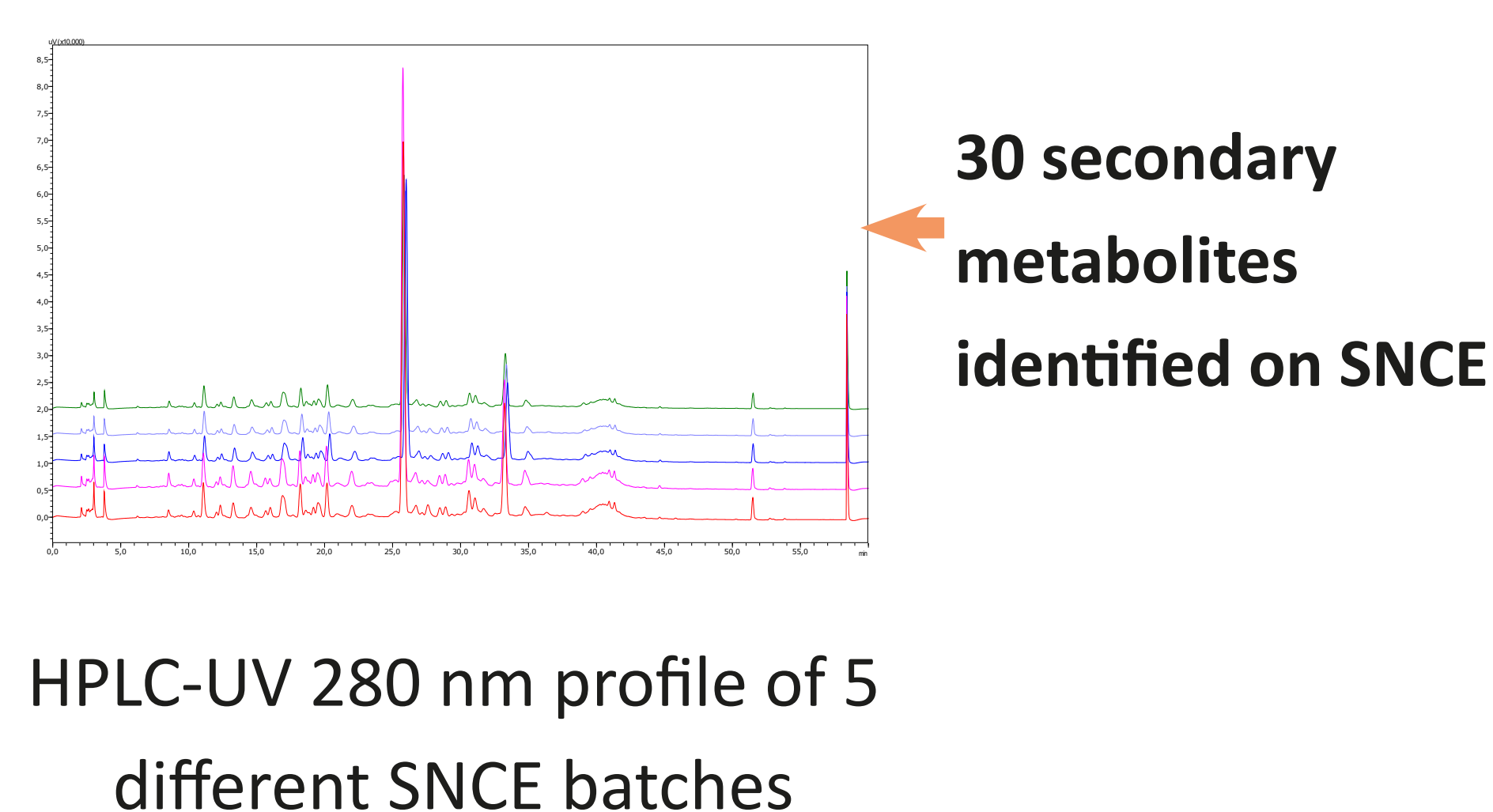
Impact of SNCE on Feed Conversion Ratio and Average Daily Gain of poultry



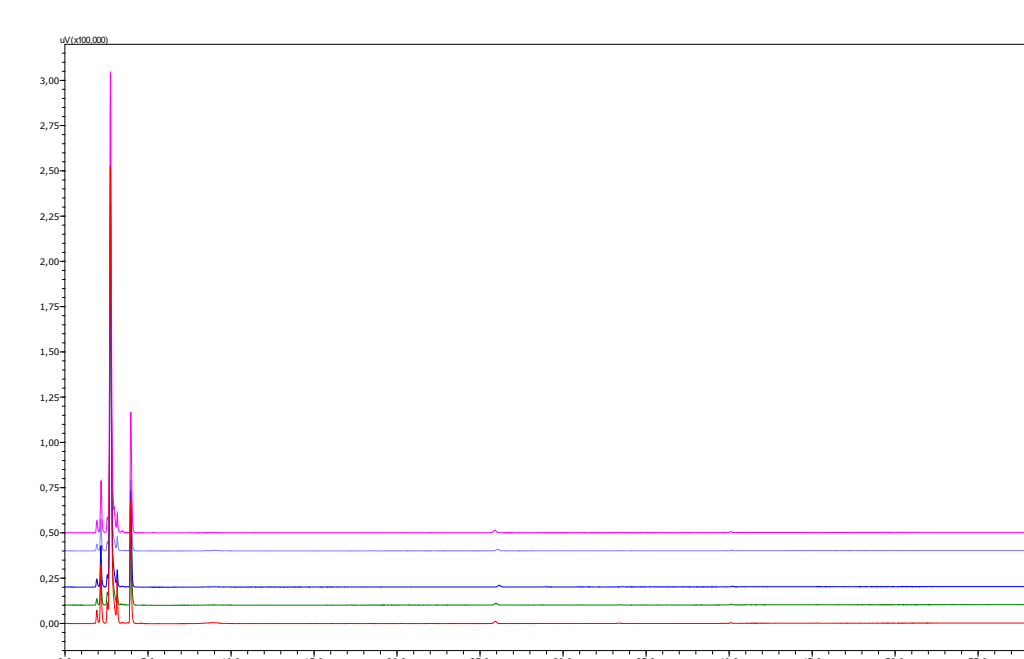
+4.3 % ADG in average

-2.4 % FCR in average

2) Citrus extract characterization

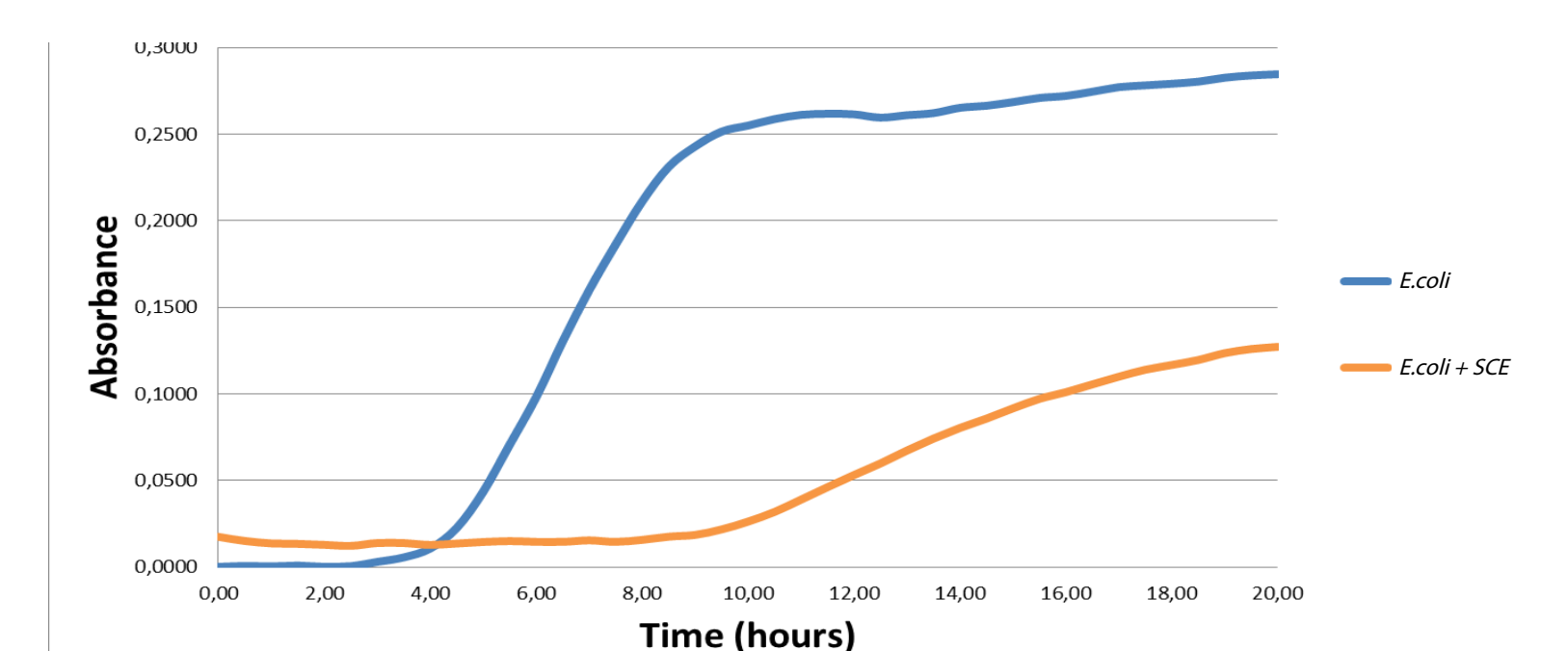


Pectic oligosaccharides as SNCE major compounds

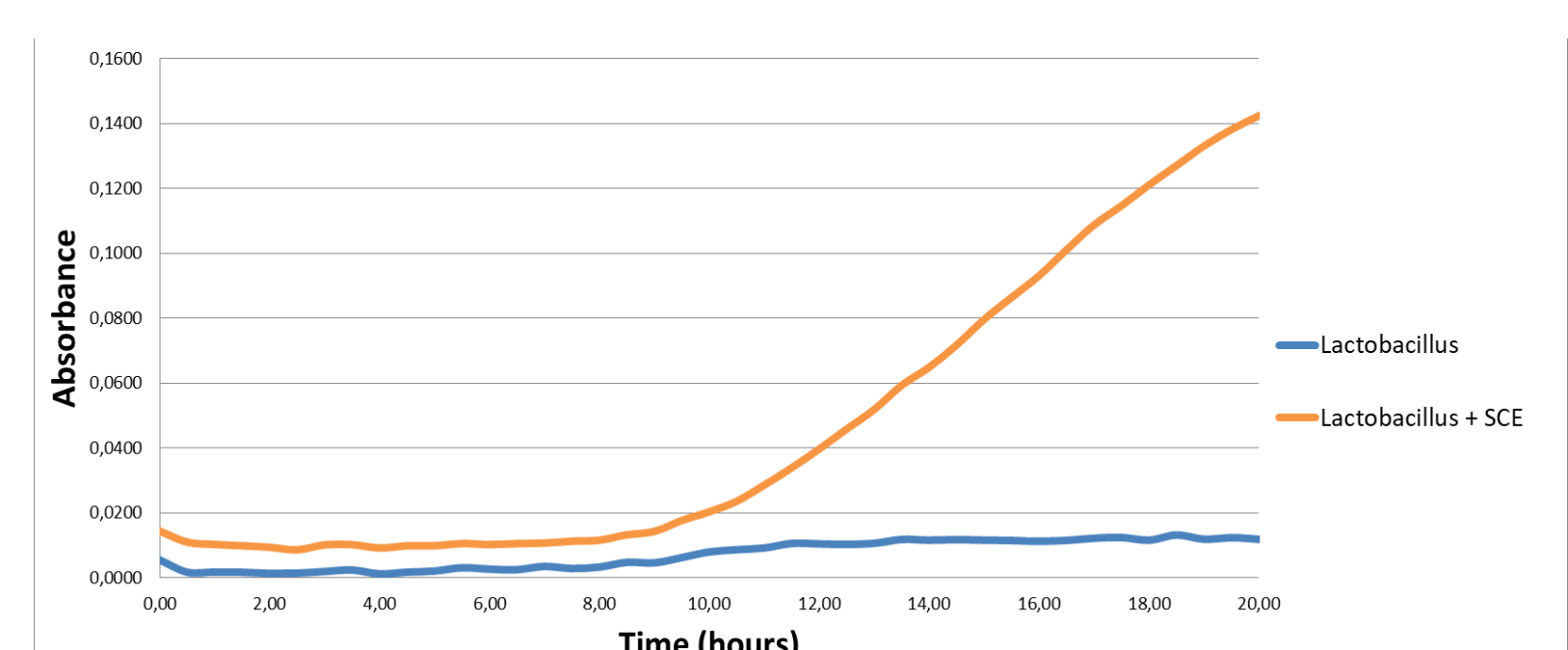


3) Citrus extract effect on bacterial growth

Comparison of *Escherichia coli* evolution kinetics with our without SNCE



Comparison of *Lactobacillus acidophilus* evolution kinetics with our without SNCE



Conclusion

- Standardized Natural Citrus Extract supplementation enhance animals' growth performances;
- Characterization is essential to guarantee the effect on animals;
- Pectic oligosaccharides, hesperidin, and eriocitrin were identified as major component in SNCE;
- *In vitro* assay confirm the beneficial effect of SNCE in *L.acidophilus* and *E.coli* growth