POSTER

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# COMPARATIVE USE OF SEVERAL MICROALGAE IN BROILER FEEDS

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**OBJECTIVE:** The aim of this study was the evaluation of four microalgae: *Chlorella vulgaris (Chv), Nannochloropsis oceanica (No), Spirulina platensis (Sp) and Tetraselmis chuii (Tc)* as ingredients for broiler feeds.

## EXPERIMENTAL PROCEDURE

### MICROALGAE:

➡ *Chlorella vulgaris (Chv), Nannochloropsis oceanica (No), Spirulina platensis (Sp), Tetraselmis chuii (Tc)*

➡ **Parameters measured:**

- Hygroscopicity
- Flowability
- In vitro 2-phases digestibility of Dry Matter, Organic Matter and Protein

### FEEDS:

➡ Mash and Pelleted broiler feeds

Wheat diets prepared replacing

➡ half of soybean crude protein by each microalgae

➡ **Parameters measured**:

- Flowability, homogeneity, stability, pellet durability
- In vitro 2-phases digestibility of DM, OM and CP

| INGREDIENT (%) | T1 Soybean | T2 Chv | T3 No | T4 Sp | T5 Tc |
|---|---|---|---|---|---|
| WHEAT | 62.8 | 50.9 | 58.7 | 66.6 | 67 |
| SOYBEAN MEAL 48% | 30.7 | 15.8 | 14.9 | 14.5 | 13.9 |
| SOYBEAN OIL | 2.8 | 1.1 | 2.2 | 1.7 | 1.1 |
| MACROMINERALS | 2.4 | 1.7 | 1.7 | 1.9 | 1.1 |
| PREMIX & AA | 1.4 | 2.5 | 2.5 | 1.9 | 2.5 |
| CHLORELLA | - | 28 | - | - | - |
| NANNOCHLOROPSIS | - | - | 19.9 | - | - |
| SPIRULINA | - | - | - | 13.5 | - |
| TETRASELMIS | - | - | - | - | 14.3 |
| **NUTRICIONAL VALUE** | | | | | |
| AME (Kcal/kg) | 2880 | 2880 | 2880 | 2880 | 2880 |
| Dry Matter (%) | 88.1 | 90.4 | 90.2 | 89.2 | 88.9 |
| Crude protein (%) | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 |

## RESULTS

***Table 1: Flowability of microalgae and feeds***

| TREATMENTS | FLOWABILITY DEGREES | |
|---|---|---|
| | MICROALGAE | FEEDS |
| Soybean → T1 | - | 35 |
| Chlorella → T2 | 56 | 52 |
| Nannochloropsis → T3 | 43 | 41 |
| Spirulina → T4 | 55 | 45 |
| Tetraselmis → T5 | 55 | 36 |

***Table 2: Evaluation of Homogeneity: Crude Protein content analyzed in 10 samples of each feed***

| MASH FEEDS | VALUES OF CRUDE PROTEIN (%) | | | | |
|---|---|---|---|---|---|
| | MEAN | MIN. | MAX. | ST.DV. | CV (%) |
| T1 (soya) | 21.34 | 20.86 | 21.55 | 0.209 | 0.98 |
| T2 (Chv) | 21.66 | 21.51 | 21.73 | 0.077 | 0.36 |
| T3 (No) | 23.03 | 22.87 | 23.21 | 0.107 | 0.46 |
| T4 (Sp) | 21.77 | 21.53 | 21.90 | 0.116 | 0.53 |
| T5 (Tc) | 20.99 | 20.81 | 21.13 | 0.088 | 0.42 |

***Figure 1: Microalgae hygroscopicity and room conditions***

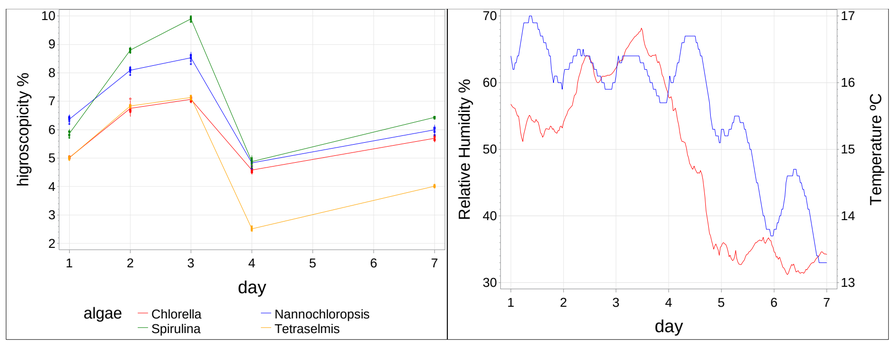



***Figure 2: Feeds' stability***

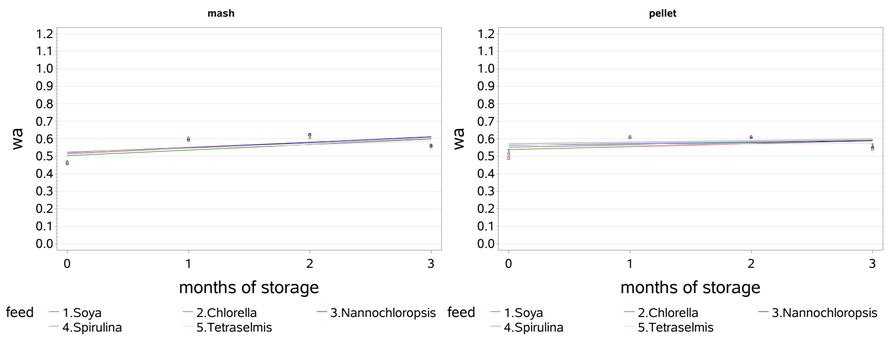



***Figure 3: Pellet durability***

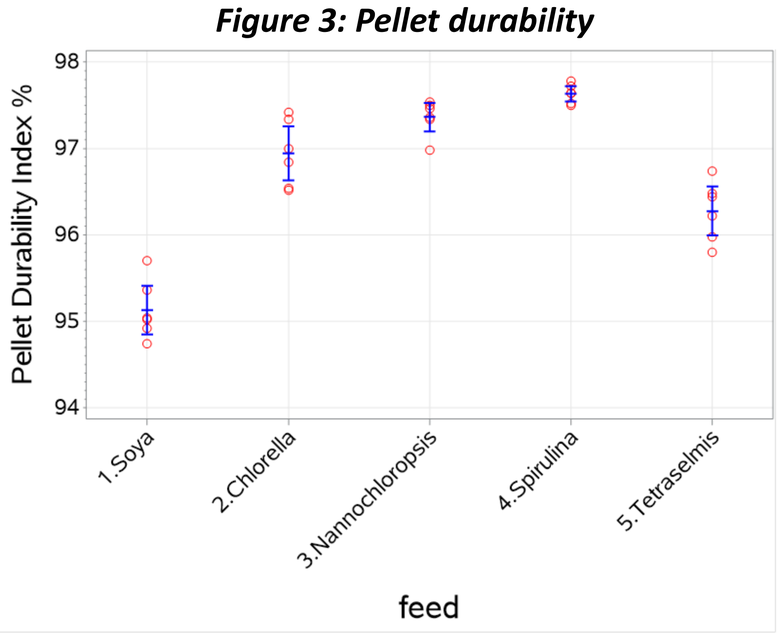
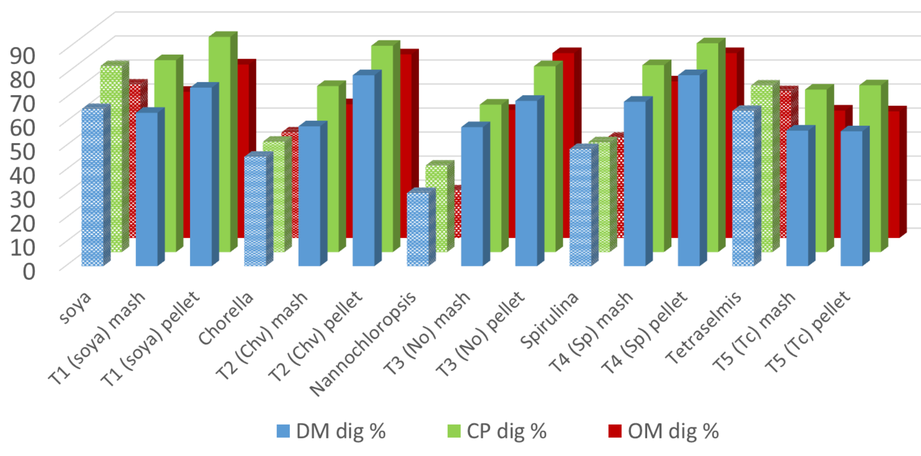



***Figure 4: Two-phase in vitro digestibility of DM, CP & OM in microalgae and feeds***




## CONCLUSION

The tested microalgae could partially replace soybean meal in broiler feeds

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PRO FUTURE

Horizon 2020 Programme

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