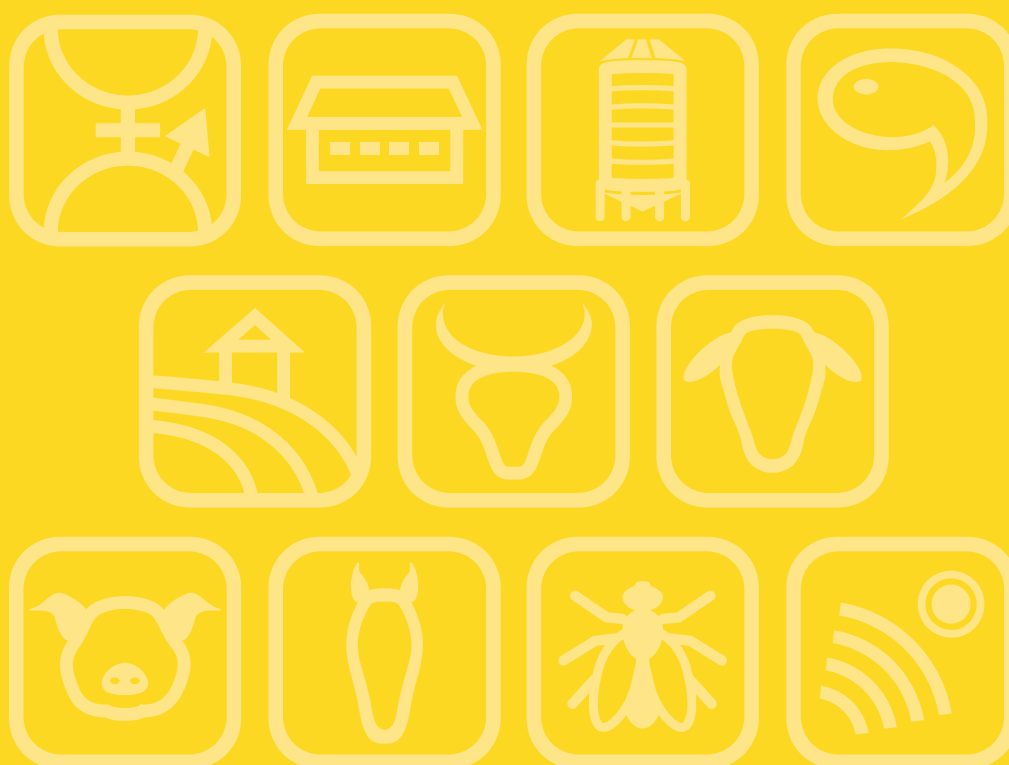


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Effect of a new high fibre feed on blood biochemistry of outdoor finished male local pigs

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This work, within the framework of ECO-PIG Project, measured the effects of a high soluble dietary fibre feed on blood biochemistry parameters in outdoor raised Portuguese Alentejano (AL) male pigs (n=30) with access to *ad libitum* water and feed. Surgically castrated (group C) and intact pigs (groups I and IE) were fed commercial diets from 40 to 130 kg body weight. From 130 until 160 kg (slaughter), groups C and I were fed commercial feeds while group IE ate the isoproteic and isoenergetic experimental diet, including agro-industrial by-products. Blood samples were collected at 120 kg (before the start of the fattening period) and two days before slaughter. Serum levels of total protein, urea (U), glucose, triacylglycerols (TG) and cortisol (COR) were determined. At 120 kg, U levels were different among the groups (3.3±0.2 in IE, 4.0±0.2 in I, and 5.0±0.1 mmol/l in C pigs, P<0.001). At 160 kg, they were different between IE and C groups, again with lower values in intact pigs (3.1±0.2 in IE, 3.4±0.3 in I, and 4.0±0.2 mmol/l in C pigs, P=0.034). These overall lower U levels in intact pigs suggest a more efficient nitrogen use for lean tissue growth than in castrates. TG levels were lower in intact pigs at 160 kg (0.30±0.03 in IE, 0.37±0.04 in I, and 0.53±0.04 mmol/l in C pigs, P<0.001). Higher blood TG levels relate with fatter pigs, and C pigs produced fatter carcasses than intact ones (see ‘The ECO-PIG project: Use of a new high fibre feed for outdoor finishing of intact male local pigs’). Finally, COR levels at 160 kg were lower in IE than in I and C pigs (79±13 in IE, 272±38 in I, and 204±22 nmol/l in C pigs, P<0.001). This suggests lower stress levels on the IE group and agrees with the number pigs with of skin injuries related to agonistic interactions observed in the last week of trial (4 in IE, 8 in I and 9 in C pigs). Further studies will test the effect of the experimental feed on pork boar taint and meat quality of intact AL pigs raised outdoors.

The effects of external treatment with essential oils on milk quality: a lipidomics approach

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Mastitis is one of the major health issues in dairy farming. An increase in mastitis in a herd is generally followed by increased use of antibiotics, which in turn increases the risk for antibiotic residues in milk and the eventual increase in antibiotic resistance. The EU project addresses this issue by exploring alternative approaches such as essential oils (EO) to explore their antibacterial and immunomodulatory activity. The present *in vivo* study describes the results of external treatment of mammary gland affected by sub-clinical mastitis using natural essential oil of *Thymus capitatus*. The study was carried out on 12 animals. Mammary glands were treated at topic level with EO, whereas control was treated with the emulsifying solution sued as a vehicle. Milk samples were collected at Days T0, T8, T21 and T28, and untargeted lipidome analysis was carried out. 2 and 5 µl of sample for the positive and negative ion mode, respectively, were separated by liquid chromatography (LC) with a Kinetex EVO C18 – 2.1×100 mm, 1.7 µm (Phenomenex®) column at 45 °C connected to an ExionLC™ AD system (ABSciex) maintained at 15 °C. Separated lipid species were then ionized through an electrospray ionization (ESI) source and analysed in a TripleTOF 6600 (quadrupole time-of-flight, QTOF – ABSciex) mass spectrometer. A total of 2,450 lipids were identified. There were no differences between the samples collected at T0, T8, T28, whereas little differences were observed at T21, including DG 35:2, DG 36:8, DG 35:2, DG 33:3, DG 33:2, DGTS 22:0. The changes were limited but demonstrated that an external treatment over the surface of the mammary gland with EO may reflect, albeit in a limited way, on milk quality, at least for what concerns the lipid content.