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Use of sweet lupin *(Lupinus albus L.)* as alternative protein source in diets for podolian young bulls

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ABSTRACT

The Podolian bovine represents an important example of Italian rustic breed, since it is able to live under difficult environmental conditions and it takes advantage of sources that could not be otherwise used, producing meat and secondarily milk. The "Podolica" breed is diffused in the marginal areas of the south of Italy and it is especially reared in Lucania and also Apulia. It could be improved by means of a rearing management set up in agreement with the traditional systems, using the pastures and feeding schemes aimed to increase meat productions.

This trial was carried out on sixteen podolian young bulls of about 9 months of age that were transferred from the pasture to the box and after that divided into two homogeneous groups of 8 subjects each. Then the young bulls had been fed *ad libitum* for about 180 days on straw and a complete feed containing either extruded soybean meal s.e. (group Soybean, S) or sweet lupine (*Lupinus albus* L., var. *Multitalia*) (group Lupine, L).

The two different pelleted feeds were planned in order to be approximately isoproteic (17% DM) and isoenergetic (1 Feed Unit for meat production/kg DM).

The feeding sources had been consumed by the two groups in the order of 63% feed and 37% straw.

Feed intake within each group was also calculated. The L group feed intake was 8.47 kg DM/day against 8.82 kg DM/day evaluated for the S group.

All the relives and the analysis were performed according to the ASPA methodologies.

The productive performances did not showed significant differences between the two groups during the experimentation. In fact, the results concerning the daily weight gain (1.110 *vs* 1.171 kg/day of L and S groups, respectively) were satisfactory as well as the feed conversion ratio (7.63 *vs* 7.54 kg DM as fed/kg, obtained respectively for the L and S groups).

The slaughter took place when bulls were 15 months old. As for the slaughtering data no statistical differences were found, evidencing good cold dressing percentage on empty body weight with values close to 65% in both theses.

With regard to the cutting yield, the weights of the right half carcass were comparable in the two groups, however a higher, but not significantly, incidence of the Lumbar region was recorded in the L than the S.

Subsequently, at the dissection of the Lumbar region into the tissue components, the incidences (%) of lean were similar between the two groups, even if lightly higher in the L with respect to S; moreover, L group showed a significantly lower fat amount in comparison with the S one (5.68% *vs* 7.89%, $P<0.05$). Such trend was evidenced for the values concerning the intramuscular fat content (3.22 of L *vs* 3.34% of S) of the *Longissimus lumborum* assessed by the chemical analysis.

We may conclude that sweet lupine, as alternative protein source in diets for Podolian young bulls, can overall provide productive performances as well as meat production and quality characteristics that are comparable with the soybean.

Moreover, the lower percentage of fat recorded in the Lumbar region from the animals fed sweet lupine could be a positive outcome, in accordance with the dietetic guidelines for human health.