Dorper x Pelibuey hair male lambs (n=32) with initial body weight (BW) of 21.3 ± 1.53 kg, and 60 days (d) old were used to evaluate the influence of implantation strategy with zeranol on chemical and physicochemical characteristics. Lambs were randomly assigned to four treatments (8 by group). Treatments were: C, control group without implant; Z12, 12 mg of zeranol; Z24, 24 mg of zeranol in a single application, and RZ12, 12 mg of zeranol given twice. Upon slaughtered, the muscles Longissimus dorsi (LD) and Biceps femoris (BF) were used to evaluate the proximal composition, pH, water holding capacity (WHC), color, shear force (SF), total collagen (TC), insoluble (CINS), and those solubility percentage (PSOL) and insolubility (PINS). A decrease (P<0.05) in intramuscular fat content was observed to implanting, and this decrease was higher in BF increasing zeranol doses and reimplantation. The WHC of LD muscle was affected by treatments, being higher in implanted lambs (P<0.05). The SF of LD changed (P<0.05) by implantation, being 7.53 kgF at control and 5.13 kgF at lamb implanted (P<0.01). The collagen content and their components were mostly affected in BF (P<0.05). The implantation increase TC, and the reimplantation raise PINS. The zeranol doses increase and lambs reimplantation, does not adversely effect on physicochemical characteristics, and even when there may be a fat reduction and a collagen increase, the meat tenderness was not affected. For all that, suggests the use of these growth promoters in sheep production without meat quality detriment.

**Keywords**
Implantation strategy, zeranol, lambs, meat quality.