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IDENTIFICATION OF SKELETAL MUSCLE FIBRE TYPES IN THE GOAT (*Capra hircus*) BY COMBINED USE OF HISTOCHEMICAL MYOFIBRILLAR ATPase AND ANTI-MYOSYN HEAVY CHAIN MONOCLONAL ANTIBODIES

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In the present study, enzyme histochemistry of myofibrillar ATPase (mATPase) combined with a panel of anti-myosin heavy chain (MHC) monoclonal antibodies (Mabs) was used to identify and compare muscle fibre types in the *semitendinosus* muscle goats. Transverse frozen cryostat sections were stained with mATPase after acid (range, pH 4.2 to 4.6, separated by 0.1), alkaline (range 10.3 to 10.6) and double (pH 10.3 + pH 4.5) preincubations. Additional serial sections were stained for the demonstration of NADH-tetrazolium reductase (an oxidative marker) and α-GPD (a glycolytic marker) histochemical activities. Additional serial sections were reacted with a battery of Mabs specific against selected MHC isoforms in the rat: Slow (anti MHC-I), Fast (anti MHCs IIA+IIX+IIB), SC-71 (anti MHC-IIA), BF-35 (anti MHCs I+IIA+IIB), BF-G6 (anti MHCs embryonic +IIB), BF-F3 (anti MHC-IIB) and S5-8H2 (anti MHCs I+IIX+IIB). Three mayor fibre types could be distinguished according with their mATPase histochemical reactions: I (acid-stable and alkaline-labile), IIA (acid-labile and alkaline-stable) and IIX (acid-labile at pH 4.2, but partially acid-stable at pH 4.5, and alkaline-stable at pH 10.3, but partially alkaline-labile at pH 10.5). Two subtypes of type IIA fibres could be separated according with their NADH-TR: 1) those IIA fibres with high oxidative reaction were classified as IIAo, while the IIA fibres with moderate NADH-TR reaction were typed IIAmo. All muscle were unreactive in the double preincubation method of mATPase. The pattern of reactivity of the six Mabs was as follows: Mab stained I and IIX, as previously determined; Mabs Fast and SC-71 stained fibres expressing IIA and/or IIX MHC isoform; Mab BF-35 stained type I and IIA fibres; Mab BF-G6 labelled fibres type IIX; Mab S5-8H2 stained fibres expressing MHC-I or MHC-IIX or both; and BF-F3 did not react, indicating that a MHC homologous to the MHC-IIB of the rat is not present at the goat. Based on this pattern of inmunoreactivity it was possible to differentiate four fibre types according with their MHC content: I, IIA, IIA+IIX and IIX. In general, except for the pure type I fibres most of the fibres analysed were mismatched between histochemical and immunohistochemical classification. These results show that type II fibres in the goat have probably been misclassified in numerous previous publications and this has an important functional impact, since physiological characteristics of muscle fibres have dicated to a large extension by their MHC composition.