



Poster category: Animal Genetics

Characterization of the regulatory region of bovine mucin 2 (MUC2) gene

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ABSTRACT:

Livestock has been highlighting as an emergent sector and with high growth in developing countries. Brazil is the largest meat exporter in the world and its production has increased during the last years. Throughout the intestinal epithelium surface of all mammals, there is an intricate polymer network, formed by gel-forming mucins, which plays a protective role due to the formation of a physical, chemical and immunological barrier between the organism and the environment. Mucin 2 (MUC2) is the main mucin glycoprotein in the small and large intestine of mammals. Therefore, the study of this class of glycoprotein and its regulations is of paramount importance for the understanding of mammalian livestock digestive process. However, the current literature lacks data about the characterization of MUC2 regulatory elements in livestock, more specifically in cattle. Here, throughout the comparison of human and mice MUC2 characterized promoter sequences, and cattle DNAs sequences deposited in the GeneBank, we designed primers and isolated a candidate regulatory region for the bovine MUC2 gene. Using the luciferase reporter gene, we are able to quantify the activity of the isolated putative bovine MUC2 promoter, and its variants deletions, in low intestine mammalian cells LoVo (human colorectal adenocarcinoma cell line). MUC2 is expressed specifically in the gastrointestinal tract (GIT), which makes its promoter also an important candidate for expression of heterologous genes of biotechnological interest in the bovine GIT in a specific and vigorous way.

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