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Growth Hormone Alters the Proteome of Differentiated MAC-T Cells

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ABSTRACT

Growth Hormone (GH) improves growth and lactation in many species. Mammary epithelium is responsive to GH though the mechanism of these effects has not yet been fully characterized. Bovine Mammary Alveolar Cell-T (MAC-T) cells uniformly differentiate and secrete casein proteins in response to dexamethasone, insulin and prolactin (DIP) and are a widely used ruminant mammary cell model. We have found significant changes in triacylglycerol, cholesterol and phospholipid distribution in MAC-T cells stimulated with 10 ng/ml GH. To characterize these direct effects of GH on a proteomic level, total protein was isolated from MAC-T cells after differentiation for seven days with DIP and either 0 or 10 ng/ml GH. Proteins were separated by isoelectric point and molecular weight using two-dimensional gel electrophoresis. We have observed a change in the abundance of multiple proteins when MAC-T cells are stimulated with GH and the identification of these proteins is being pursued using MALDI-TOF mass spectrometry.