Titel des Beitrags: Autologous serum improves yield and metabolic capacity of monocyte-derived hepatocyte-like cells: possible implication for cell transplantation.

Abstract: Hepatocyte-transplantation is a therapeutic approach for diverse acute and chronic liver diseases. As availability of primary cells is limited, there is an increasing demand for hepatocyte-like cells (e.g., neohepatocytes generated from peripheral blood monocytes). The aim of this study was to evaluate the effects of six different human AB sera, fetal calf serum, or autologous serum on production of neohepatocytes. The yield and quality of neohepatocytes varied considerably depending on the different sera. Using autologous sera for the whole production process we constantly generated the highest amount of cells with the highest metabolic activity for phase I (e.g., CYP1A1/2, CYP3A4) and phase II enzymes (e.g., glutathione-S-transferase). Moreover, similar effects were seen examining glucose and urea metabolism. Especially, glucose-6-phosphatase and PAS staining showed distinct serum-dependent differences. The role of macrophage activation was investigated by measuring the secretion of TNF-?, TGF-?, and RANKL, MMP activity, as well as mRNA levels of different interleukins in programmable cells of monocytic origin (PCMO). Our data clearly demonstrate that the use of autologous serum reduced initial
macrophage activation in PCMOs and subsequently improved both yield and function of differentiated neohepatocytes. The autologous approach presented here might also be useful in other stem cell preparation processes where cell activation during generation shall be kept to a minimum.