3R Projects funded by ZEBET: Angiogenesis in vitro: All-in-one-assay

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Angiogenesis, the growth of endothelial sprouts from pre-existing blood vessels, is required for tumour growth. Until now most of the studies on antiangiogenic substances are done in particularly painful animal experiments (e.g. cornea angiogenesis assay) since existing in vitro models of angiogenesis prove a disappointing choice.

In order to replace these animal experiments the focus of our projects is to establish a realistic in vitro model of angiogenesis which allows investigation and quantitation of all steps of the angiogenic cascade in only one assay.

An in vitro system based on bovine endothelial cells was developed and validated providing the opportunity of both, stimulation and inhibition of angiogenesis within each step. However, adaptation to human endothelial cultures showed that not all of them could be stimulated to angiogenesis comparably. Therefore, the current project deals with comparison of the protein expression profile of different angiogenic and non-angiogenic endothelial cultures.