

## THE EFFECT OF VITAMIN D ON RAT PANCREATIC BETA CELLS IN VITRO

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### OBJECTIVES

Vitamin D is currently known for its effects on the bone and muscle systems as well as for its pleiotropic and antiproliferative effects. The relationship between vitamin D and diabetes mellitus is in the focus of scientific research. Vitamin D deficiency has been found to be associated with the development of diabetes mellitus type 1 as well as with poor glycemic control in diabetes mellitus type 2.

The aim was to study the effect of vitamin D on the proliferation of rat pancreatic beta cells *in vitro*.

### METHODS

The effect of 1,25(OH)<sub>2</sub>D<sub>3</sub> (Sigma-Aldrich) at an initial concentration of 100 nM on INS-1 rat pancreatic beta cells was studied *in vitro*. INS-1 rat pancreatic beta cells were incubated for 48h at a temperature of 37°C in a humidified atmosphere of 5% CO<sub>2</sub> in the presence and absence of 1,25(OH)<sub>2</sub>D<sub>3</sub>. INS-1 rat beta cells were incubated with progressively decreasing concentrations of 1,25(OH)<sub>2</sub>D<sub>3</sub>, at an initial concentration of 100 nM (range 100 - 3.125 nM) to assess the proliferation of INS-1 rat beta cells. The proliferation of INS-1 rat beta cells was assessed using the XTT cell proliferation assay (AppliChem). In order to determine the number of viable cells the cell proliferation kit XTT employs 2,3-Bis-(2-methoxy-4-nitro-5-sulphophenyl)-2H-tetrazolium-5-carboxanilide salt (XTT). Only in living cells mitochondria are capable to reduce XTT to form an orange colored water soluble dye. Therefore, the concentration of the dye is proportional to the number of metabolically active cells.

### RESULTS

1,25(OH)<sub>2</sub>D<sub>3</sub> was found to reduce the proliferation of INS-1 rat beta cells *in vitro*.

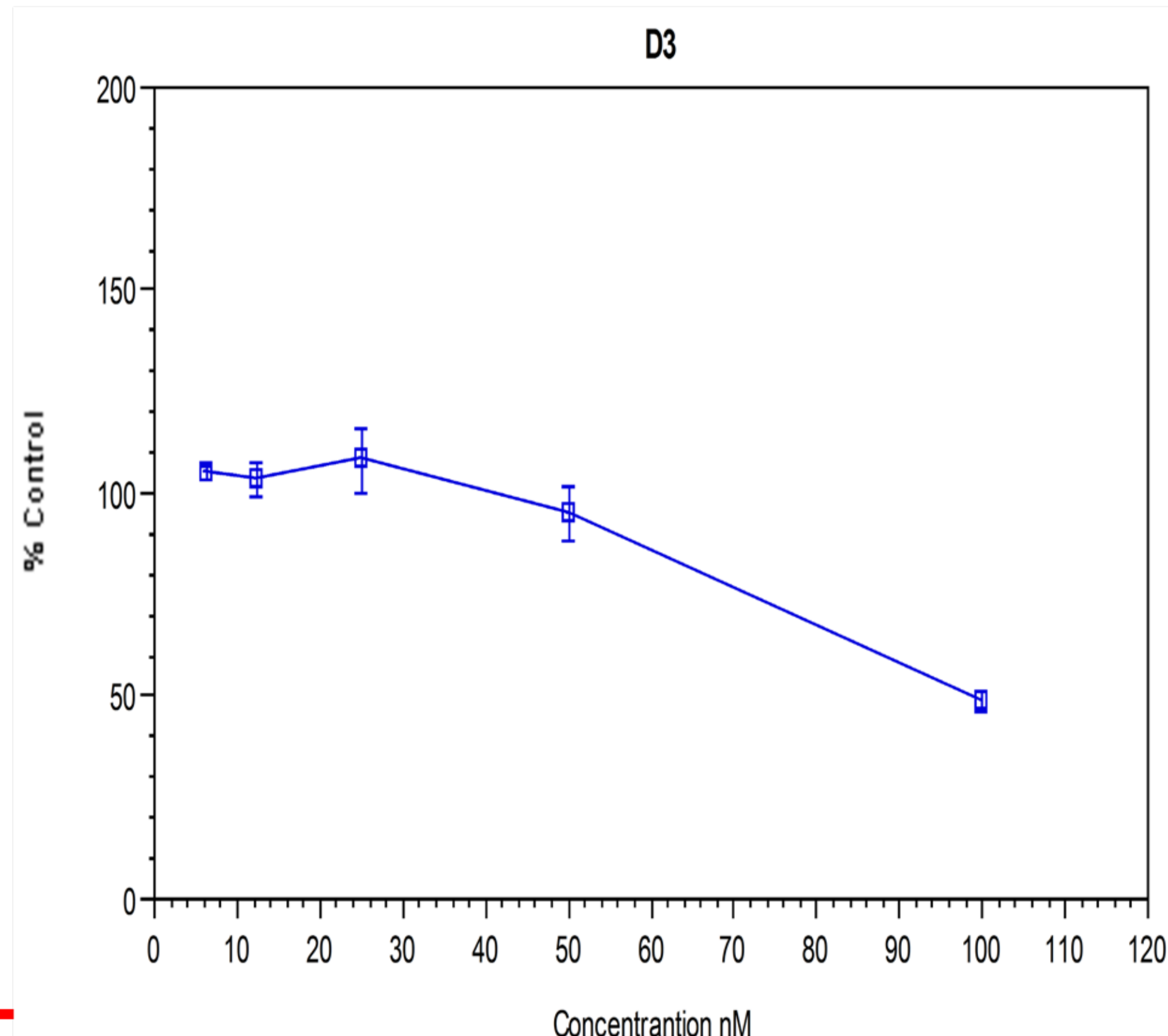
### CONCLUSIONS

Vitamin D was found to modulate the proliferation of rat pancreatic beta cells *in vitro*. Similarly, Blauer et al (Pancreatology 2015) have recently found that vitamin D in physiologically attainable and clinically relevant concentrations reduces the proliferation of pancreatic stellate cells *in vitro*.

### References

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□ (EDTA: Concentration vs %Control)

