Evaluation of biological parameters in *Wistar* rats treated with news vanadium-based compounds

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Vanadium compounds have been assessed with agent potential of *Diabetes mellitus* treatment. These compounds show insulin mimetic effect, because decreases plasma glucose levels[1]. In this study was evaluated biological parameters such as reduction of body, testicular weight, glucose level (mg/dL) and plasma testosterone in diabetic *Wistar* rats, induced with streptozotocina, using a new vanadium(IV)-based compounds. After synthesis, this compound was characterized by FTIR, UV-Vis Spectroscopy, Elemental analysis, MALDI-TOF and Thermogravimetric Analysis. Twenty *Wistar* rats (Rattus norvegicus var. Albinus) were used for the experiment. Rats with 70 days of age were selected by non-random sample of convenience. They were subjected to different treatments, according to the experimental group: diabetic animals (n = 5); insulin-treated diabetic animals (n = 5); diabetic animals treated with the vanadium complex standard; diabetic animals treated with vanadium-based compound codified as VBHED (n = 5). The level of plasma testosterone shown a tendency to increase in groups treated with insulin and vanadium compounds compared to diabetic and treated animals with the standard compound (Figure 1). According to the literature was expected a reduced of this hormone in diabetic patients, because the diabetes acts principally changing levels of important hormones for the spermatogenic process as testosterone, FSH and LH[2]. In the Table 1 shows a reduction of body and testicular weight in groups treated with the VBHED compared to groups treated with standard drug and control. Moreover, in the 7th week of treatment a significant difference in the glucose level of groups treated with insulin ($p < 0.01$) and compound test ($p < 0.05$) compared to group diabetic animals, showing a hypoglycemic effect. The reduction of biological parameters mentioned after use of vanadium complex indicates that this compound is promising to be used in the Diabetes treatment.

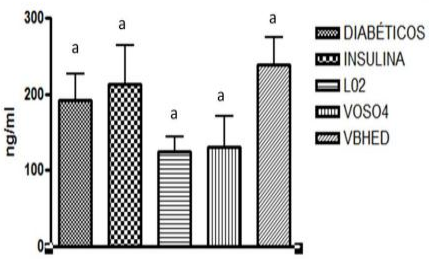

Figure 1: Serum testosterone levels in different animals groups: diabetics, insulin, standard ($VOSO_4$), L02 and V-BHED (vanadium-compounds)

Table 1: Biological parameters evaluated in groups of animals

	Experimental Groups			
Parameters	*Diabetics*	*Insulin*	*Standard*	*Compound test*
Body Weight (g)	224,2 ± 22,91^{ab}	302,0 ± 64,11^{a}	183,2 ± 33,21^{b}	317,0 ± 62,86^{c}
Testicular Weight (g)	1,241 ± 0,408^{a}	1,584 ± 0,23^{a}	1,036 ± 0,483^{a}	1,404 ± 0,28^{a}
Glucose (mg/dL) 1º week	427,8 ± 59,44^{a}	99,2 ± 24,55^{b}	218 ± 92,31^{b}	317,2 ± 128,5^{a}
Glucose (mg/dL) 3º week	447,4 ± 75,78^{a}	117,6 ± 43,12^{b}	142,8 ± 113,6^{b}	325,4 ± 98,26^{a}
Glucose (mg/dL) 5º week	425,0 ± 15,00^{ac}	104,8 ± 24,08^{b}	196,4 ± 120,2^{bc}	342,6 ± 86,24^{c}
Glucose (mg/dL) 7º week	426,8 ± 29,54^{a}	150,6 ± 66,76^{b}	296,6 ± 161,4^{ab}	178,0 ± 66,17^{b}

*Values represent mean ± standard deviation. Different letters indicate statistical difference $p < 0.05$.

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