



INITIAL EVALUATION OF SOLUBLE PROTEIN IN LEAVES OF *Stylosanthes* SPECIES



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INTRODUCTION

The *Stylosanthes* is a group of leguminous plants drought tolerant, with great adaptability to low soil fertility and association with nitrogen-fixing bacteria (Andrade e Karia, 2000). Some are used as fodder and green fertilization (Pathak et al., 2004). These are species with a wide distribution in tropical, subtropical and temperate in the Americas, tropical Africa and Southeast Asia (Ferreira & Costa, 1979). *Stylosanthes capitata* has rounded leaves, reaching up to one meter tall (Skerman et al., 1991), while *Stylosanthes viscosa* are oblong leaves and the species reaches up to forty inches in height (Pio-Corrêa, 1984). Nitrogen is a macronutrient required in large quantities in the plant, and its availability limiting factor for growth. Leguminous plants have the ability to assimilate inorganic nitrogen environment (or ammonium nitrate) and synthesize all amino acids and proteins, and other nitrogenous organic compounds present therein (Udvard et al., 1992), and in conditions of low availability of nitrogen in the environment fixing bacteria of the group *Rhizobium* sp. establish a symbiotic association with leguminous plants, infecting the root system forming root nodules (Oghoghorie & Pate, 1971; Wery et al., 1986).

MATERIAL AND METHODS

- ✓ The experiment was conducted at the Federal University of Mato Grosso do Sul, Campus of Três Lagoas - MS, Brazil.
- ✓ The soluble protein content in the species *Stylosanthes viscosa* and *Stylosanthes capitata* was conducted at seven and two months after planting, respectively, according to Bradford's method (1976), with readings of optical density at 595 nm in a spectrophotometer made, taking as standard bovine serum albumin (BSA), which served for the construction of the calibration curve of the experiment, with reading of optical density of 260 nm absorbance (Table 1).
- ✓ in a completely randomized design with 20 replications.

Absorbance (nm)	Concentration Bovine Serum Albumin (BSA) micrograms in 0,1 µg/mL
0,032	50
0,055	66,7
0,1	100
0,117	200
0,428	1000

Table 1: Data of the linear calibration curve with albumin as standard

From these data we obtained the calibration curve of the experiment, and obtained the equation of the line that best fits the experimental points, in which the quantitative measure (absorbance), which expresses the ability of materials to absorb radiation at specific frequency, is placed depending on the concentration of unknown substances, such substance (albumin).

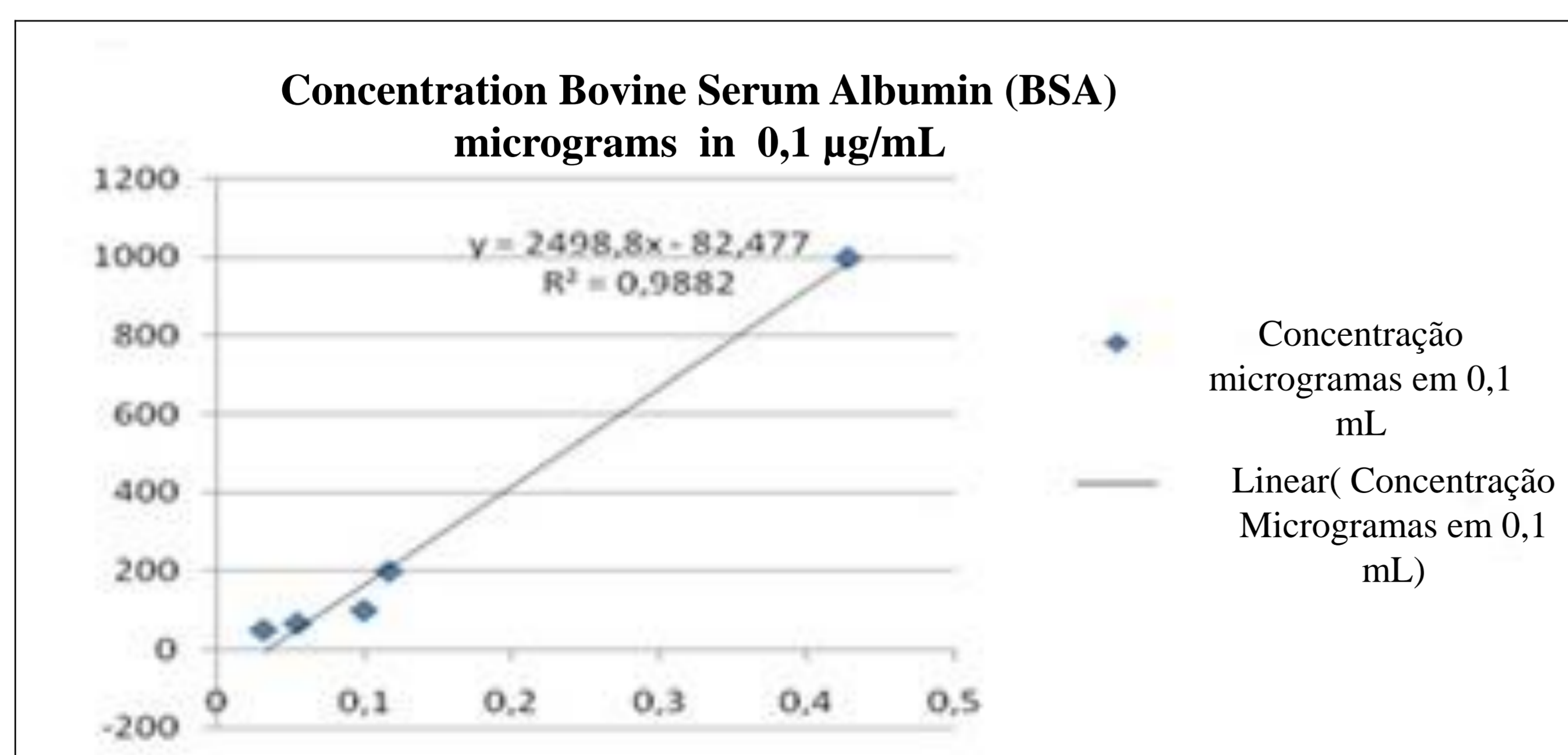


Figure 1: Calibration curve for protein BSA (Bovine Serum Albumin)

According to the (Graph 1) the absorbance values ranged from 0 to 0,5 nm, which is zero percent transmittance and absorbance infinite, whereas concentrations ranged from 50 to 1000 mg / ml. Note that the points were very close straight, with little variance and this implies that the results obtained were satisfactory. With these data in the graph, we come to the equation of the line $y = x 2498.8 - 82.477$ where y is the concentration axis and the X axis is the absorbance. The R^2 is the coefficient of determination, and the maximum value it can attain is 1. In other words, the R^2 value is found equal to 0.9882, it implies that 98.82% of the variance of y (protein concentration) is explained by the variance of x (absorbance).

RESULTS AND DISCUSSION

The absorbance of the sheets *Stylosanthes* was different. In *Stylosanthes viscosa* absorbance was less than 0.095 nm absorbance 0.169 nm with *Stylosanthes capitata*. Applying the absorbance values in the equation of the line in (Figure 1), we found the values of concentrations of soluble proteins in the leaves of *Stylosanthes*, as shown in (Table 2). In *Stylosantes viscosa* has been 154.909 mg / mL of proteins in solution, where as in *Stylosantes capitata* the observed value was 339.82 mg / mL. The amount of soluble proteins in *Stylosantes capitata* was 34 mg while in *Stylosantes viscosa*, the value obtained was 15.5 mg. That is, according to these data, the leaves of *S. capitata* have higher levels of soluble proteins, approximately two times more than in the leaves of *S. viscosa* and therefore it is expected that *S. capitata* contains a larger amount of amino acids incorporated in their leaves, even at the initial stage of their development. This result may have been influenced by the age of the plants, as young tissues have a high biosynthetic activity, increasing the production of various compounds, including proteins.

Species	Absorbance (nm)	Micrograms of Proteins to 0,1 µg/mL	Fresh matter Proteins In leaves (µg)
<i>Stylosanthes viscosa</i>	0,095	154,909	15,5
<i>Stylosanthes capitata</i>	0,169	339,82	34

Table 2: Values found the amount of soluble proteins in the leaves of *Stylosantes viscosa* and *Stylosantes capitata*

CONCLUSIONS

- ✓ *Stylosanthes capitata* in its leaves has more than twice the amount of soluble proteins found in *Stylosanthes viscosa*.
- ✓ Thus, it is expected that *Stylosantes capitata* contains a larger amount of amino acids incorporated in their leaves, even at the initial stage of their development.

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