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HYDROCYANIC ACID AND DIGESTIBLE CARBOHYDRATES CONTENT IN TEN NEW CASSAVA (Manihot esculenta Crantz) VARIETIES RECENTLY INTRODUCED IN THE STATE OF CEARÁ, BRAZIL 1/

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1. INTRODUCTION

Cassava (*Manihot esculenta* Crantz) is planted and consumed, in different forms, in practically all Brazilian states (*6*). This important culture has not yet been sufficiently studied with regard to its genetical improvement, and it is generally assumed that more research is needed with the aim of producing varieties with low toxicity and a high content of digestible carbohydrates (*3*).

There are in the pertinent literature various citations about the toxicity of cassava in different countries where it is grown, and with the possible exception of HCN, very little is known about the metabolism of the intoxication by cassava products in humans and farm animals (*2,4,6*). In fact the high volatility and toxicity of the hydrocyanic acid (HCN) per se justifies the elevated degree of poisoning accidents registered throughout

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replications varied from 19.7 and 20.2 ('Pirassununga') to 28.8 and 29.8 ('SFG-2-204'), respectively for the Viçosa and Fortaleza experiments.

Analysis of the variance (F test) showed significant differences at 5% probability, among varieties. Based on that information, a comparison of the averages was performed (t test) at the same level of probability and the results were: SFG-2-204=Branca de Santa Catarina >=Preta de Quilombo >=Engana Ladrão. From that point on the differences varied for each location, being as follows: Engana Ladrão=Manteiga >=Vassourinha >=Sabará Entre Rios >=Mico >=Guaxupé >Pirassununga in Fortaleza, and Engana Ladrão >=Manteiga >= Vassourinha >=Sabará Entre Rios = Mico = Guaxupé > Pirassununga, in Viçosa. Since the statistical order was almost the same in both experiments, they were compared, but the results were not statistically different. Even so, since there was a tendency for higher values in Viçosa than in Fortaleza, with the exception of the two first varieties, suggesting that the conditions of Viçosa might favor higher concentrations of digestible carbohydrates in the roots, a correlation analysis was performed and a correlation coefficient of 99% was found. This indicates also that under the conditions described, there was no influence of latitude or soil upon the digestible carbohydrate percentage in the roots of the varieties studied. Quantitatively the results agreed with the ones found in the pertinent literature (*2,6,7,8*).

TABLE 2 – Digestible carbohydrate content (% of fresh weight) of 10 cassava varieties cultivated in Fortaleza-CE and in Viçosa-MG (*)

Varieties (common names)	Location	
	Fortaleza	Viçosa
SFG-2-204	29.8 a	28.8 a
Branca de Sta. Catarina	29.6 a	28.0 a
Preta de Quilombo	28.3 ab	27.8 ab
Engana Ladrão	27.6 b	27.0 ab
Manteiga	27.3 b	26.5 b
Vassourinha	26.5 bc	26.3 bc
Sabará Entre Rios	25.5 c	24.9 c
Mico	24.8 cd	24.3 c
Guaxupé	24.0 d	23.4 c
Pirassununga	20.2 e	19.7 d

(*) Average of 6 replications. Values with same letter in the column do not differ significantly ($p<0.05$).

4. SUMMARY

Ten cassava varieties (*Manihot esculenta* Crantz) were experimentally cultivated in Fortaleza-CE (4º S and 41º W) and in Viçosa-MG (21º S and 43º W). In Fortaleza

the soil is sandy and the climate hot and dry, while in Viçosa the soil is heavy and the climate cold and wet. The roots were analysed and the hydrocyanic acid (HCN) and digestible carbohydrates (CAD) contents were determined. The ten varieties studied were: SFG-2-204, Branca de Santa Catarina, Preta de Quilombo, Engana Ladrão, Manteiga, Vassourinha, Sabará Entre Rios, Mico, Guaxupé and Pirassununga. The HCN content varied from 0.23 (SFG-2-204) to 0.09 (Pirassununga) mg/g fresh weight. The CAD varied from 29.8 (SFG-2-204) to 19.7% of fresh weight. There were no statistical differences ($P<0.05$) between the results in the two experimental locations, under the conditions described.

5. RESUMO

(ÁCIDO CIANÍDRICO E CARBOIDRATOS DIGERÍVEIS EM DEZ VARIEDADES DE MANDIOCA (*Manihot esculenta* Crantz) RECENTEMENTE INTRODUZIDAS NO ESTADO DO CEARÁ, BRASIL)

Dez variedades de mandioca (*Manihot esculenta* Crantz) foram experimentalmente cultivadas em Fortaleza-CE (4º S e 41º W) e em Viçosa-MG (21º S e 43º W). Em Fortaleza o solo é francamente arenoso e o clima seco e quente, enquanto em Viçosa o solo é argiloso e o clima úmido e frio. As raízes foram analisadas e determinaram-se os teores de ácido cianídrico (HCN) e carboidrados digeríveis (CAD). As dez variedades estudadas foram: 'SFG-2-204', 'Branca de Santa Catarina', 'Preta de Quilombo', 'Mico', 'Sabará Entre Rios', 'Vassourinha', 'Manteiga', 'Engana Ladrão', 'Guaxupé', e 'Pirassununga'. O teor de HCN variou de 0,23 (SFG-2-204) a 0,09 (Pirassununga) mg/g de matéria fresca. Os CADs variaram de 29,8 (SFG-2-204) a 19,7 % (Pirassununga) da matéria verde. Não houve diferença estatisticamente significante, a 5% de probabilidade, entre os resultados obtidos nos dois locais experimentais, nas condições descritas.

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