rhyolitic rocks of the present area and adjoining areas points to the fact that these rhyolites probably represent a younger volcanic phase. The presence of rock fragments of basic and acidic nature in the rhyolitic rocks of the present area is a very common feature. A few samples of rhyolite collected from Pali, Jalore and Barmer districts give an age of 526 m.y.[3] indicating the possibility of some younger flows in southwestern Rajasthan. As such the possibility of a younger volcanic activity represented by ultrapotassic rhyolites in the southwestern Rajasthan may not be ruled out.

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SOME METABOLIC ASPECTS OF FUNGAL INFECTED SWEET POTATO (*IPOMEA BATATAS* (L.) POIR) TUBERS

S. K. ADDY, A. SINGH* and S. SRIVASTAVA*
*Department of Soil Science, * Department of Biosciences, Narendra Deva University of Agriculture and Technology, Faizabad 224 229, India.*

METABOLIC changes are induced in response to fungal infection in the root tissue[1,2]. During incubation, a considerable rise in DNA and phenolics has been reported[3,4]. The increase in polyphenols affects the measurement of nucleic acids[4]. Keeping this in view, it was thought essential to evaluate the levels of nucleic acids, protein and phenolics during incubation of fungal-infected sweet potato root tubers.

Sweet potato var Pusa Safed tubers were inoculated with *Rhizopus stolonifer* in a sterile glass desiccator as described earlier[5]. The infected roots were incubated for 8 days at 23 ± 1°C and 90% relative humidity. DNA and RNA were extracted by the PCA method[6] and estimated using diphenylamine[7] and Orcinol reagents[8], respectively. Protein content was measured as described by Lowry *et al*[9]. Total phenols were determined using Folinciocalteau reagent[10]. Ortho-dihydric phenols

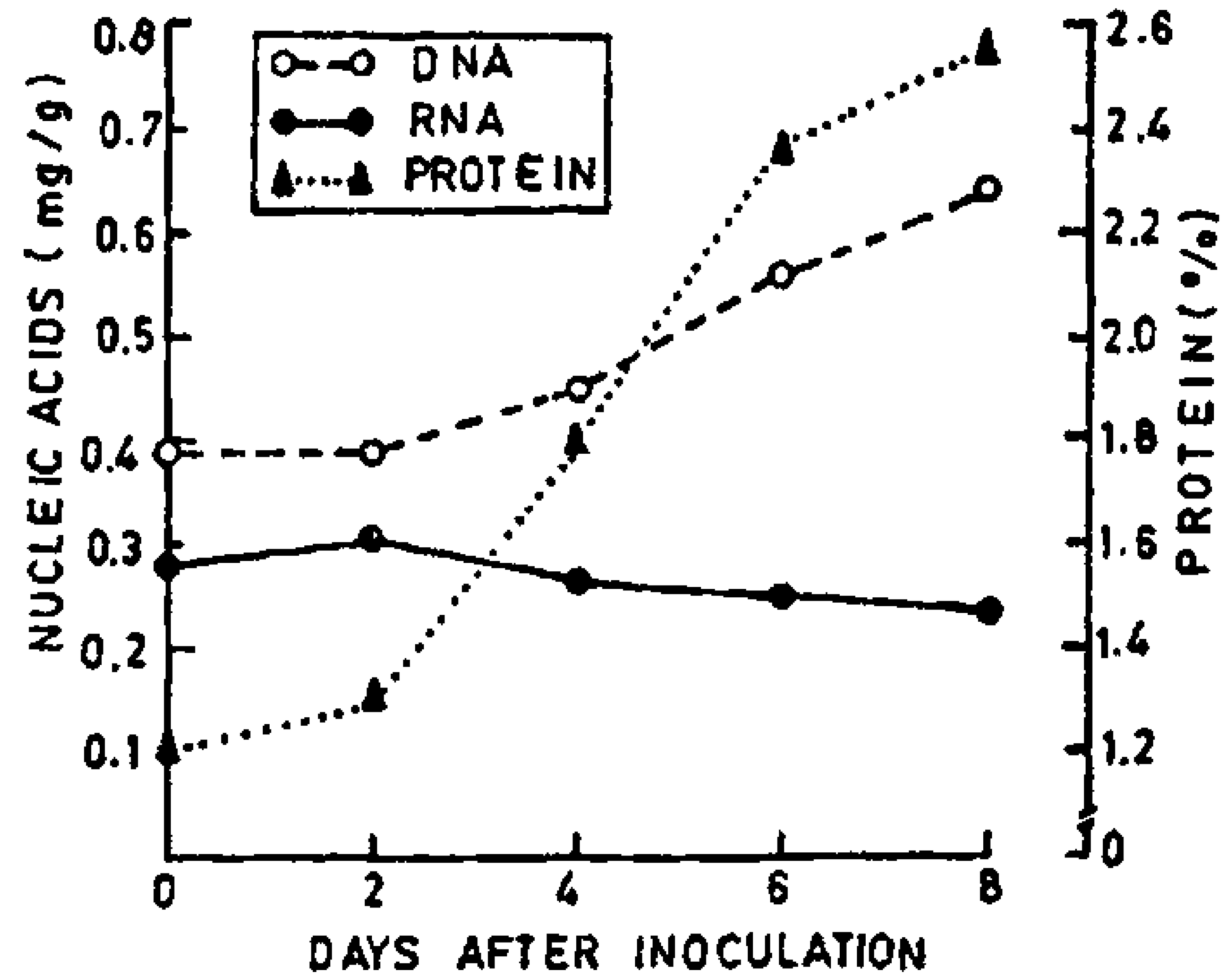

Figure 1. Changes in nucleic acids and protein during incubation of infected sweet potato tubers.

(OD phenols) were estimated in alcoholic extract using Arnow's reagent[11].

A perusal of figure 1 reveals that the DNA content of the infected tissue remained constant up to 2 days after inoculation; thereafter increased continuously during incubation. The observed increase in DNA is possibly due to the ability of the parasite to stimulate DNA synthesis. A slight increase in RNA was found after 2 days of incubation and then declined gradually up to 8 days of incubation, though the decrease was non-significant. A two-fold rise in protein content was noticed at the end of the incubation period. Similar results on protein content have been noticed earlier[3,12].

As is evident from figure 2, the total phenols and OD-phenols increased continuously up to the end of the incubation period. This indicates that during pathogenesis there is a greater accumulation of phenolics at the infection site. The rate of accumula-

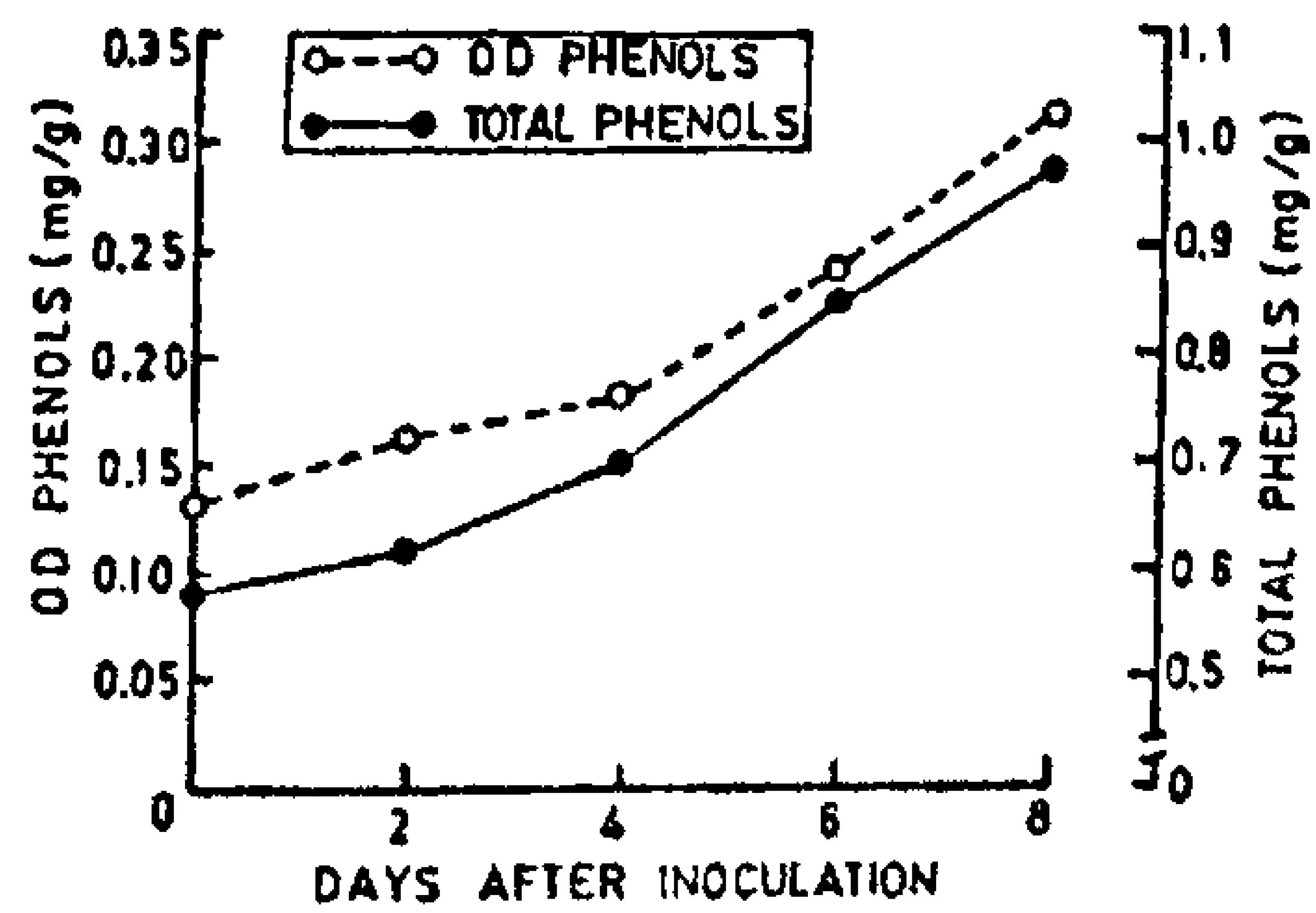

Figure 2. Changes in phenols during incubation of infected sweet potato tubers.

tion or breakdown determines the degree of resistance[13-16]. Thus it appears that the increase in phenolics in the infected tissue possibly offers resistance in response to pathogen.

Further studies are needed to understand the metabolic alterations owing to host-fungus interaction.

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CORIOLIS COUPLING CONSTANTS AND CENTRIFUGAL DISTORTION CONSTANTS OF SELENYL HALIDES

S. MOHAN, S. DURAI and N.S. NARASIMHAN
Division of Applied Sciences, Anna University, Madras Institute of Technology, Chrompet, Madras 600 004, India.

SELENYL halides ($SeOF_2$, $SeOCl_2$, $SeOBr_2$) are of XYZ_2 type molecule (pyramidal) belonging to C_s point group, with the frequency distribution $\Gamma = 4A' + 2A''$. The Raman spectra of these halides have been investigated[1]. Using a general quadratic valence force field, the potential constants and the other molecular constants such as compliance constants[2] and vibrational mean amplitudes have been reported earlier[3,4]. The present investigation is aimed at a fresh evaluation of the coriolis coupling constants and the centrifugal distortion constants to study the trends of these values.

The coriolis coupling constants ζ^α ($\alpha = x, y, z$) in pyramidal XYZ_2 type of molecules arise from the following couplings.

(i) $A' \times A''$ with respect to x and z axes.
(ii) $A' \times A'$ and $A'' \times A''$ with respect to y axis.

The coriolis matrix elements C_{ij}^α($\alpha = x, y, z$) for pyramidal XYZ_2 molecules are obtained according to the vector method of Meal and Polo[5]. From the C_{ij}^α elements, the coriolis coupling constants can be evaluated using the relation,

$$\zeta_{ij}^\alpha = (L^{-1})\ C_{ij}^\alpha\ (L^{-1})',$$

where L is the normal co-ordinate transformation matrix. The theory of centrifugal distortion constants has been reformulated by Cyvin *et al*[6] by introducing the elements $T_{\alpha\beta,s}$ instead of partial derivatives of the inertiatensor components $J_{\alpha\beta,s}$[7,8]. The non-vanishing C^α and the T_s matrix elements have been reported recently[9]. The quantities $t_{\alpha\beta\gamma\delta}$ have been obtained using Cyvin's relation. From a knowledge of the moments of inertia of the molecule, $\tau_{\alpha\beta\gamma\delta}$ elements and hence D_J, D_K, D_{JK} etc have been evaluated.

The coriolis coupling constants of the molecules are presented in table 1. The following observations were made from the values in the $A' \times A'$ coupling. ζ_{13}^y and ζ_{34}^y are negative for all the halides. ζ_{14}^y is significant indicating a strong coupling between the species concerned. It shows an increasing trend with decreasing electronegativity. On the other hand, ζ_{56}^y ($A'' \times A''$) exhibits a decreasing trend. In the $A' \times A''$ coupling, ζ_{15}^x, ζ_{35}^x, ζ_{36}^x, ζ_{15}^z and ζ_{25}^z are negative for all