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ON THE ULTRAPOTASSIC RHYOLITES FROM GURAPRATAP SINGH AND DIRI AREA, PALI DISTRICT, RAJASTHAN

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THE present area belonging to the Malani volcanic suite of southwestern Rajasthan is situated to the west of Aravalli range (lattitudes 25°35′–25°40′ N and longitudes 73°–73°10′ E). The main rock types occurring in the area are dacites and rhyolites. The rhyolites are most abundant in the area and on the basis of chemistry and petrography, these may be further classified into high silica rhyolite and ultrapotassic rhyolite.

The ultrapotassic rhyolites are generally fine-grained, aphyric and tuffaceous in nature. The phenocrysts, whenever present are of altered orthoclase. The chemical analysis of the present ultrapotassic rhyolites (table 1) differ from the other rhyolites in high K_2O (nearly 7%) and low Na_2O content (below 1%). When these rocks are plotted in the Harker diagram, they do not follow the general trend of rhyolitic rocks for K_2O and Na_2O. The Or-Ab-An diagram also reveals that the normative feldspar composition of ultrapotassic rhyolites is entirely different from other rhyolitic rocks of the present area. They have orthoclase ranging from Or_{83} to Or_{90}; such high Or is similar to the composition of highly potassic sanidines of trachytes or orthoclase phenocrysts of many granites.

The ultrapotassic rhyolites are similar in chemistry and petrography to the potassic rhyolites of Karara[1] and Manihari area[2] (table 1). When the ultrapotassic rhyolites of the present area, as well as those of the adjoining areas, are plotted in the Harker diagram, all of them fall on a common trend for K_2O and Na_2O which is different from the trend of other rhyolitic rocks of the area. The ultrapotassic rhyolites are characterized by high K_2O/Na_2O ratio. The systematic variation in K_2O/Na_2O ratio with increase in SiO_2 indicates the comagmatic nature of these rocks. The occurrence of similar ultrapotassic rhyolites in such wide apart localities points to the fact that they may be marking a particular igneous cycle in the southwestern Rajasthan.

The field relationship of the ultrapotassic rhyolites with the other rhyolitic rocks of the present area is obscure. However, the absence of rock fragments of ultrapotassic rhyolites in the other

Table 1 *Composition of the ultrapotassic rhyolites*

	1	2	3
SiO_2	73.85	76.46	80 38
TiO_2	0.46	0.15	0 05
Al_2O_3	12.27	13 17	10.72
Fe_2O_3	2.98	1.16	0.82
FeO	0 42	0.19	0 20
MnO	0.01	0.02	0.03
MgO	0 17	0.14	0.08
CaO	0.72	0.47	0.20
Na_2O	1.94	0.52	0.42
K_2O	6.36	6.90	6.70
P_2O_5	0.05	0 08	0 05
L.O I	0.58	0.45	—
Total	99.81	99.71	99.65
K_2O/Na_2O	3	13	16

1. Potassic rhyolites from Karara, Jalore District; averages 12 analyses[1]; 2. Ultrapotassic rhyolites from the present area; averages of 4 analyses; 3. Ultrapotassic rhyolites from Manihari, Pali District; averages of 10 analyses[2].

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

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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

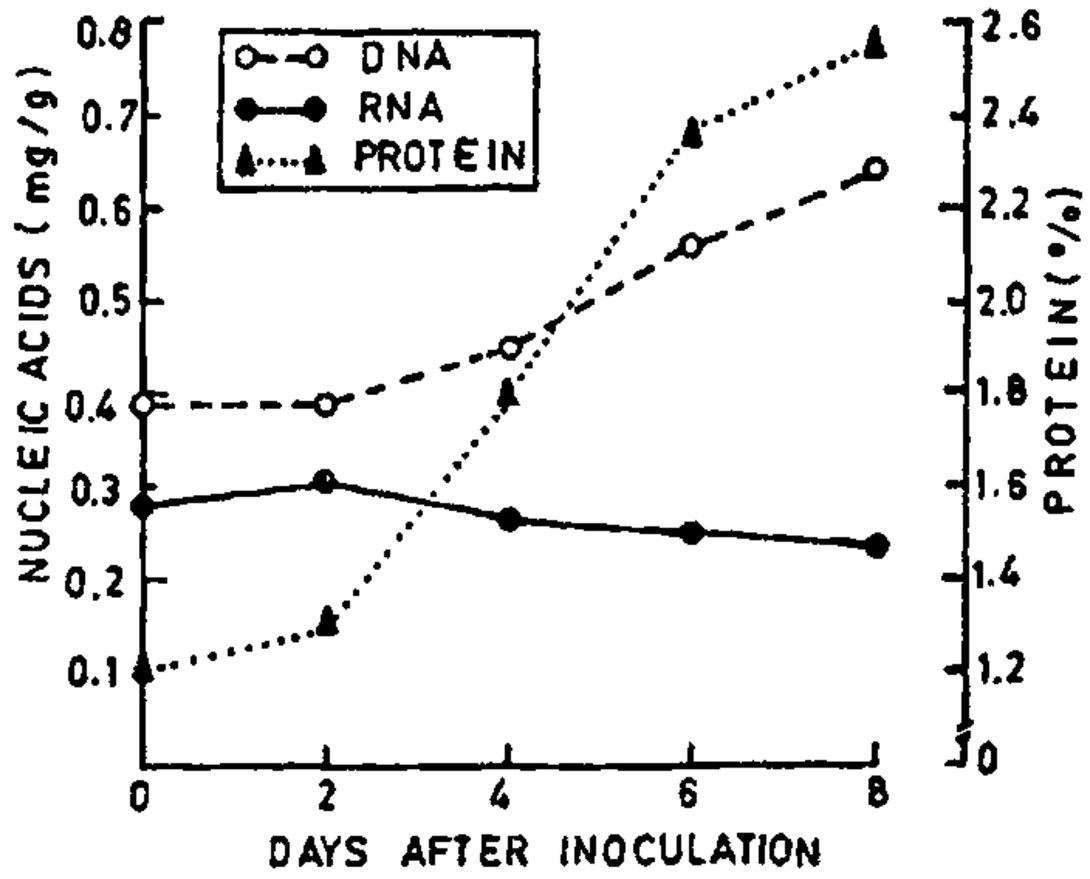

Figure 1. Changes in nucleic acids and protein during incubation of infected sweet potato tubers.

(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-

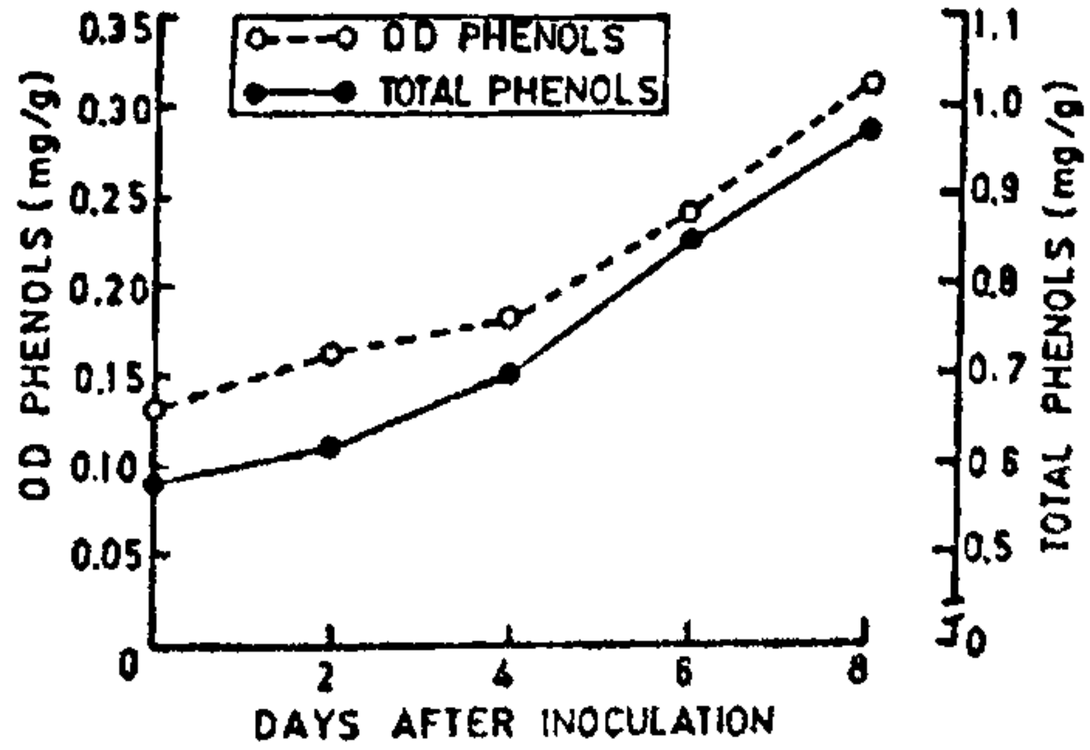

Figure 2. Changes in phenols during incubation of infected sweet potato tubers.