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Bidirectional movement of transport of radioactive inorganic nutrition (P32) between parasite the host during Orobanche and Dandrapthi falcata

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***Abstract**: Orobanche and Dendrophthoefalcata are angiosperm parasite stimulates phosphorus absorption rate of the host plant. An accumulation of phosphate, at the parasite contact zone of the host stem, has been observed. Redistribution of Phosphate in the top leaves of the infected host is considerably reduced as compared to the healthy one. This is due to the tapping of Phosphate by parasite from the host. Additional proofs have also been obtained to indicate a bidirectional flow of P32 between parasite and the host. Singh et al (11) have demonstrated an accumulation of phosphate compounds in the parasite which is perhaps indicating an active transport mechanism at the point of host- parasite contact. Similar accumulation of phosphorus in Loranthus –host associate has been reported (7). Littlefield et al (4), reported a substantial movement of sugar from host's body to dodder but was unable to establish any evidence of movement from the parasite to the host. Some recent studies have indicated transmission of viruses by Cascuta. [Price (8); Lackey (3); Weathers (13); Miller & Troutman (5)]. On the hand, Polak (6) was unable to transmits a virus by dodder. No reference of movement.*

***Key words:** Phosphorus 32; Dendrophthoe falcate; Orobanche aegyptiaca pers; Ficus glomerata etc.*

I. Introduction

Many people give statementthat Orobanche and falcata are take nutrients to host but we prove that it will also give nutrients to host. Common Orobanche andDendrophthoe falcatais an unusual angiosperm parasite with multiple hosts. Its vestigial photosynthetic apparatus is unable to meet its total demand. The mechanism of its metabolic adjustment with different Hosts is still to a large extent unknown. The prevailing view that there is perhaps an unidirectional flow of organic food, inorganic nutrients and water from host to parasite is questioned in the present study,of inorganic nutrients from the parasite to the host has been found, in the literature.P32 is measured in Geiger molar counter in molar mass as well as in gram.

The present study with P32 as tracer revealed that the parasite exerts an active force on the points of contact with the host to change the normal flow of nutrients in the host stems towards its own requirements. Additional proofs where also obtained to indicate a bi directional flow of P32between the parasite and the host.

II. Methods and Material

Experiment 1-

Firstly, we take braches of Ficus glomerata having orobanche and another having dendrophthoe falcata infections and another of without both infections after that we will keeped their roots in water for some time. And then we fed ita type of Hoagland solution containing radioisotope P32 (60 c/ 100ml) under normal light conditions inside the laboratory.Samples of Hoagland solution were taken after samples of host were taken after 42 hours to observe the rate of Phosphorus uptake. Simultaneously leaf samples of host from three sites (below infection, infection zone and above infection). Were after that along with a parasite for test in radioisotope. Radioautograms of infection plants were taken to establish the pattern of P32 distribution following for orobanche and falcata infection.

Experiment 2

In study, pot grown Ficus ficus glomerata or nerium indicum and Impatiens balsamina, a scrub and herbs respectively. Were chosen as hosts and to observe the flow of P32 from parasite to host. The free end of the parasite was cut, dipped into the nutrient solution tagged with radioactive Phosphate(60 /100ml) for 24hrs under normal laboratory conditions. At the end of experiment period samples were taken from the different parts of the host and parasite as mentioned in Table 1. Samples were dried in an oven at 65degree Celsius for 72hrs and then ground to fine power. 100 mg of each powered sample was spread uniformly on a planchette, a

few drop of4% MgSO4 added and ash in furnace. Radioactivity was measured in an open window GM 4% MgSO4 added and ash in furnace. The Orobanche and dendrophthoefalcata are parasites, generally all people thick that. But we proves that they are not completely parasites they also give nutrients to its host. This is testes by us by giving radioactive material P32 in parasites and tested in GM counter and X-ray. This report proves that the parasites are not total parasite because it also gives nutrients to its parasite.
Radioactive was measures in an open window GM counter .Theresult is shown in figure.

III. Result

Result will gives us as counts per minute. Background: 29 counts/ minute efficient of counts/ minute Efficiency of counter: 1% approximately.

In case of infection Orobanche, a root parasite and dendrophthoe falcatarise in Phosphate absorbed rate in the host record. Radioactive plate (Fig. 2) further demonstrated an accumulation of phosphate at the parasite contact zone of the host stem. Study of the redistribution of phosphate in the infected plant body(Fig . 1 B) revealed that the top leaves in the host possess only 38% of the redistribution phosphate found in lower epidermis of leaves. On the other hand, the top leaves have about 63% of the restriction phosphate found in the lower epidermis of very healthy plant. Obviously, this is due the tapping of phosphate by the parasite from the host as shown in the histogram. Distribution of Phosphate in whole stem (Fig 1.C) does not seen affect very badly in leaves. P32 is used which is also generally known as phosphorus 32 which is an radioisotope. Which is measured in gram and mole, ml (Millie litter) etc.

Result is clearly shown that in Table 1 indicate in parasite is able to absorb P32 through the cut portions and transfers almost an equal amount to the host's only stem part. There redistribution patterns of entering in stem of host from parasite body has been depend on the what type of plant is taken as host and quality of plant. In the woody scrub Nerium indicum the distribution is very fairly equal in upper epidermis of the leaves and in lower regions of the leaves have infection zone, While in the herb Ficus glomerata and Impatient balsamina, the younger leaves pull up more than nine times of the entering phosphorus as compare to the lower epidermis of leaves.P32 is used in this experiment for testing that Orobanche like root parasites can also give nutrients to host plant. This is tested by radioisotope and GM that is Geiger molar counter for net weight and permanent weight for that material or element.

IV. Discussion

The normal distribution of phosphate in plants, as described by Biddulph (1), Brewer and Bramley (2), Rabideau et al (9) and Stumpf (12) is disturb due to Orobanche and dendrophthoe falcata infection. Orobanche and Dendrophthoe falcata changes the normal course of nutrients translocate in host's body. The present result is that further indication that is the contact with zone of Parasite infection accumulates Phosphorus and perhaps actively transported the same towards Parasite. This causes young leaves to run into a state very high deficiency nutrients.

In the above study of host and parasite relation between Orobanche and dendrophthoe falcata and exchange of nutrients between host and parasite and adjustment of parasite to different hosts, still remains to a extent unsolved. The results support the ideas about host is not merely a nutrition substrate for the total parasite Orobanche and Dendrophthoe falcata but they have very close physiological contact between their metabolic processes through the infection sites.Ficus glomerata, or natriumindicumand Impatiensbalsamina, angiosperm etc.

V. Figures and Tables

1.) A dendrophthoefalcata parasite 2.)Orobanche aegyptiaca pers.

Figure 1-

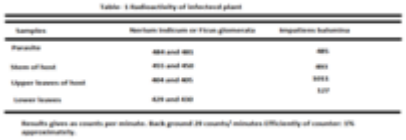
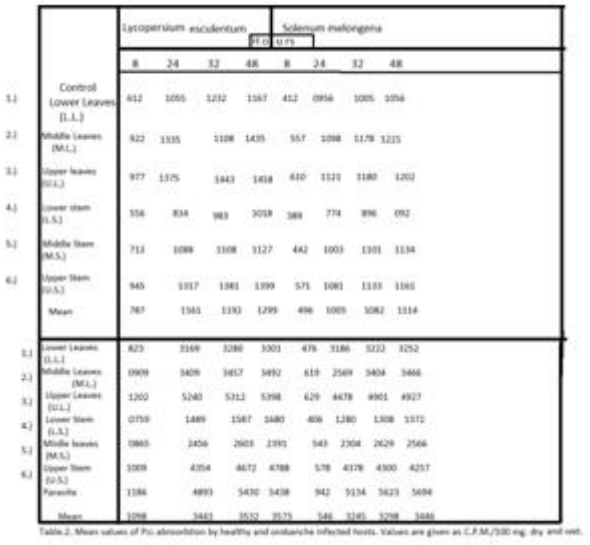


Figure 2-



		Lycopersium esculentum				Solenum melongena			
		8	24	32	48	8	24	32	48
1.)	Control Lower Leaves (L.L.)	612	1055	1232	1167	412	0956	1005	1056
2.)	Middle Leaves (M.L.)	922	1335	1108	1435	557	1098	1178	1215
3.)	Upper leaves (U.L.)	977	1375	1443	1418	610	1121	1180	1202
4.)	Lower stem (L.S.)	556	834	983	3018	388	774	896	092
5.)	Middle Stem (M.S.)	713	1088	1108	1127	442	1003	1101	1134
6.)	Upper Stem (U.S.)	945	1317	1381	1399	571	1081	1133	1161
	Mean	787	1161	1192	1299	496	1005	1082	1114
1.)	Lower Leaves (L.L.)	823	3169	3280	3301	476	3186	3222	3252
2.)	Middle Leaves (M.L.)	0909	3409	3457	3492	619	2569	3404	3466
3.)	Upper Leaves (U.L.)	1202	5240	5311	5398	629	4478	4901	4927
4.)	Lower Stem (L.S.)	0759	1489	1567	1680	406	1280	1308	1372
5.)	Middle leaves (M.S.)	0865	2456	2603	2391	543	2304	2629	2566
6.)	Upper Stem (U.S.)	1009	4354	4672	4788	578	4178	4300	4257
	Parasite	1186	4891	5430	5438	942	5134	5623	5694
	Mean	1098	3443	3532	3575	546	3245	3298	3446

Table.2. Mean values of P32 absorbition by healthy and orobanche infected hosts. Values are given as C.P.M./100 mg. dry and wet.

Figure 3-

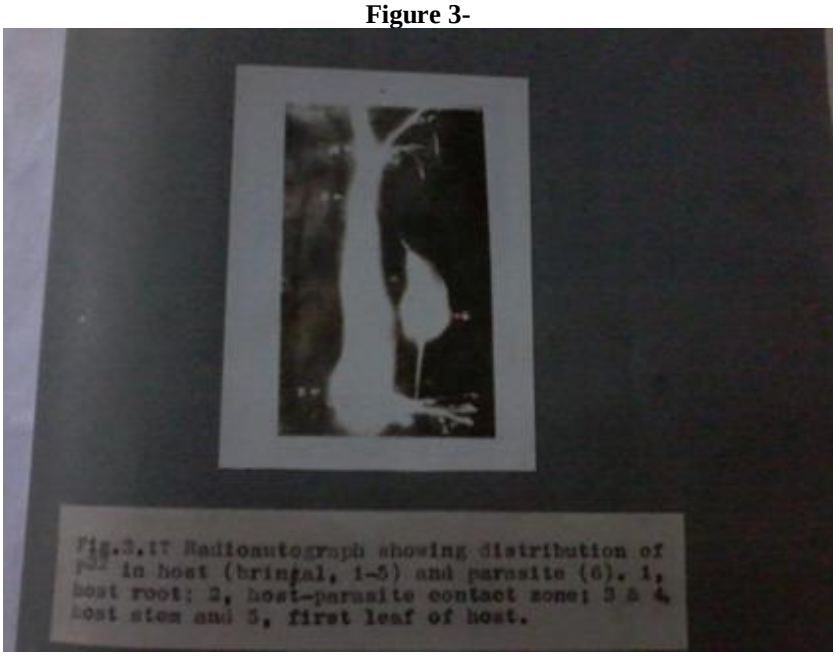


Figure 4-

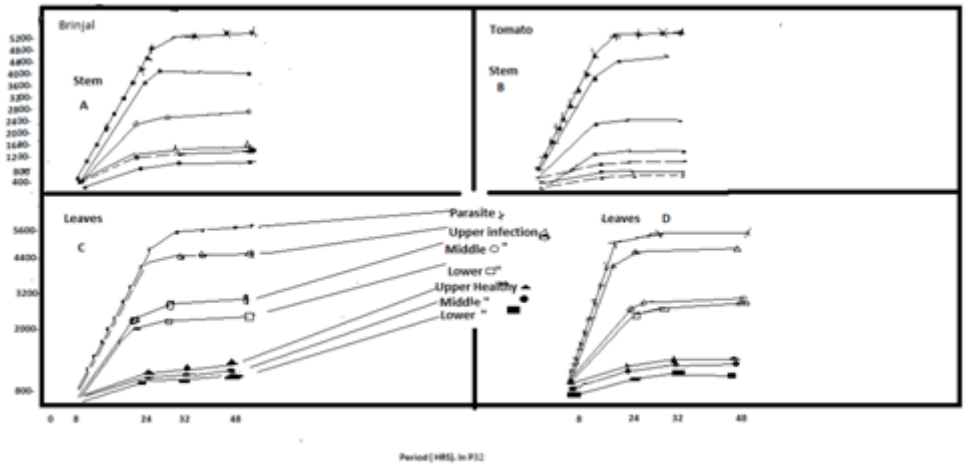


Fig. 11.7. Uptake of P32 In healthy and Infected hosts as compared to the accumulation in the parasite.

Figure 5-

VI. Conclusion

Orobanche and Dendrophthoe falcata are angiosperm parasite stimulates phosphorus absorption rate of the host plant. An accumulation of phosphate, at the parasite contact zone of the host stem, has been observed. Redistribution of Phosphate in the top leaves of the infected host is considerably reduced as compared to the healthy one.Result is clearly shown that in Table 1 indicate in parasite is able to absorb P32 through the cut portions and transfers almost an equal amount to the host's only stem part. There redistribution patterns of entering in stem of host from parasite body has been depend on the what type of plant is taken as host and quality of plant.

Acknowledgment Dedicate

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