resistant to the enzyme can be considered as replicative intermediate of the virus. One can note, however, that both absolute and relative amounts of virion RNA are higher in medium 199 than in nucleoside triphosphate medium.

Thus, the second system for the assay of polymerase activity (medium 199) has some advantages as compared with the first system (nucleoside triphosphate medium). That may depend on the fact that RNA precursors in medium 199 (purine and pyrimidine bases) are gradually phosphorylated by mitochondria and therefore RNA synthesis lasts for several hours without inhibition of the enzyme and the templates. It may also depend on continuing protein synthesis which takes place in this coupled system.

Выводы. Были сравнены две бесклеточные системы для испытания полимеразы вируса венесуэльского энцефаломиелита лошадей, находящейся в митохондриально-микросомной фракции зараженных клеток: классическая полимеразная смесь с нуклеозид-трифосфатами и среда №199.

Вторая система имеет преимущества перед первой, так как обеспечивает продолжительный (до 3-х часов) синтез РНК, более высокий уровень синтеза и образование значительных количеств вирионной РНК.

F. I. YERSHOV and V. M. ZHDANOV

D. I. Ivanovsky Institute of Virology, Academy of Medical Sciences, Moskwa D-98 (USSR), 6 April 1970.

Effects of Unmixed and Mixed Leaf Litter of Three Species of Plants on the Development and Growth of *Polydesmus angustus* Latzel

It is well known that millipedes together with other soil borne organisms help breaking down the leaf litter, but it is not known if they themselves are affected in the process. Little has also been reported on the effects of environmental conditions, including the nature of available food, on the biotic potentialities and development of diplopods. It is however known that some species of millipedes show marked preference for the leaves of some plants[1], which is correlated to the calcium contents of the leaves[2]. A significant difference in the development of millipedes grown on F_1 and F_0 layers of beech forest has also been shown[3]. The present note discusses the role of unmixed and mixed litter of 3 species of plants, under 2 environmental conditions, on the development of *Polydesmus angustus* Latzel, a common millipede in British woodlands.

Freshly emerged first instar larvae were maintained in laboratory in receptacles containing fallen and fairly rotted leaves of oak (*Quercus robur* L.), birch (*Betula verrucosa* Ehrhart) and beech (*Fagus sylvatica* L.). Larval populations were also maintained on mixed litter of oak + birch, oak + beech and birch + beech. Replicated series of each culture were kept separately in a) a constant environment with a temperature of 23 °C, constant darkness and 90% ± 5 relative humidity (RH) and b) a fluctuating environment with varying temperature (between freezing point to 30 °C), natural light and relative humidity in different hours and seasons. Because of the high feeding rates of different larval instars the leaf litter supplied had to be replenished at frequent intervals. The time for changing the food did however not coincide for all series.

The first instar larvae were reared up to the adult stage and the time taken to complete the cycle under each treatment is shown in Table I. The data suggest development was quickest when the larvae were reared on unmixed leaf litter of any plant species and maintained in a constant environment. Mixed litter of any 2 plant species in a fluctuating environment prolonged the development period. The order of development under different treatments was: unmixed litter + constant environment < unmixed litter + fluctuating environment < mixed litter + constant environment < mixed litter + fluctuating environment.

Apart from affecting the developmental rate, the litter supplied also influenced the growth of the adults. Under the constant environment, unmixed litter was conducive to the development of large adults but mixed litter resulted in the development of smaller adults (Table II).

Although these studies did not indicate how and which component(s) of the various combinations of leaf litter and environmental combinations affected the growth and development of *Polydesmus angustus*, some general inferences can be drawn. It may be that in an ecosystem with mixed stands of plants of different species the millipede will have an extended life cycle compared to an area characterized with single plant species. The differential growth rates and the development of large or small adults are also of significance in the bioenergetics of an ecosystem: shortened life cycle means not only the production of more adults in an unit time, but the development of large sized adults could lead to an increased biomass.

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Table I. Duration of development of *Polydesmus angustus* Latzel from first instar to adult stage under different combinations of leaf litter and environmental conditions

Mean time ± S.E. (in days) taken to complete the cycle from first instar to adult stage

Environment (type of litter)	Oak	Birch	Beech	Oak + Birch	Oak + Beech	Birch + Beech
Constant temperature of 23 °C and constant darkness	113 ± 23	145 ± 23	140 ± 37	223 ± 27	235 ± 21	240 ± 30
Fluctuating temperature and light	199 ± 18	211 ± 22	205 ± 27	245 ± 18	242 ± 20	250 ± 24

Figures represent mean of 4 replicates.

Table II. Total body length of *Polydesmus angustus* Latzel reared on different food media at a constant temperature of 23 °C with 90% + 5 RH in constant darkness

Rearing media	Mean length ± S.E. (mm)	Number measured
Oak litter	25.7 ± 3.7	43
Beech litter	26.9 ± 4.8	49
Birch litter	26.5 ± 3.5	45
Oak + birch litter	18.5 ± 4.5	25
Oak + beech litter	22.6 ± 3.2	28
Beech + birch litter	20.5 + 4.5	20

Zusammenfassung. Unter konstanten Temperatur-, Feuchtigkeits- und Lichtbedingungen entwickelt sich der Millipedier *Polydesmus angustus* rascher und wird grösser, wenn im Fallaub einzelner Baumarten gezüchtet, als in gemischtem Laub. Bei wechselnden Bedingungen (0–30 °C, wechselnder Feuchtigkeit und natürlichen Lichtverhältnissen) sind diese Unterschiede nur noch für reine Eiche statistisch gesichert.

BARUNDEB BANERJEE[4]

Tocklai Experimental Station, Jorhat 8, Assam (India), 1 June 1970.

[4] This report is based on an investigation I carried out at the University of London, Royal Hollowey College.

PRO EXPERIMENTIS

Degree of Allogeneic Histoincompatibility Assayed by the Hemolytic Plaque Technique

In 1963 BAIN et al.[1,2] reported that when human peripheral blood leukocytes were cultured together considerable numbers of blastoid cells appeared; in addition, about half of the cells incorporated thymidine into DNA. The stimulation of blastogenesis was not observed in leukocyte combinations of monozygotic twins. These responses have been considered as a primary immunological response, in vitro, and appear to be related to the genetic incompatibility between individuals. These findings were confirmed by others[3,4] and also extended to squirrel monkeys[5], rabbits[6], rats[7,8] and mice[7,9]. CHAPMAN and DUTTON[6] showed increased radioactive thymidine into DNA of lymphoid cells when spleen or lymph node cell suspensions from 2 unsensitized outbred rabbits were incubated together and indicated that the cells responsible for thymidine incorporation were large, undifferentiated cells. Further, DUTTON[7] showed that the enhanced DNA synthesis was correlated with histoincompatibility of mice strains.

It has been well established that phytohemagglutinin (PHA) transforms a population of small lymphocytes into blastoid cells[10,11]. Recently HOLM and PERLMANN[12] demonstrated that PHA-treated cells had cytotoxic potential against target cells. Hence, there exists a possibility that allogeneic lymphoid cells, cultured together, may interfere with the ability of cells to mature into antibody-producing cells. An attempt was made to elucidate the cell interaction between incompatible normal lymphoid cells by utilizing the hemolytic plaque assay.

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Plaque-forming cells in combinations of parents and F_1 hybrid

Strain combinations	H-2 loci	No. of experiments	2C/A+B (per culture dish)			Control (%)[a]	
LAF_1 – LAF_1	ab – ab	6	1420/2040 3150/3740	3490/3740 1375/1124	2230/2980 2990/2980	(Mean 95.7	± S.E.) 10.2
LAF_1 – A/HeJ	ab – aa	9	760/2110 1800/2230 3150/3675	880/1955 1040/2145 2290/2600	3220/2610 3680/3415 1790/2760	78.0	9.4
LAF_1 – C57L	ab – bb	6	2650/2735 1130/2285	3060/5320 1630/5480	4060/5630 3260/4705	62.4	9.3
A/HeJ – C57L	aa – bb	7	270/940 630/1700 220/4285	260/785 1460/2750	530/975 710/4120	32.5	7.1

[a] Percent of controls = $2C/A+B \times 100$ where C represents the number of PFC arising from a total of 1.0×10^7 strain A and B spleen cells cultured together in equivalent numbers. A represents the number of PFC arising from 1.0×10^7 strain A spleen cells cultured separately. B represents the number of PFC arising from 1.0×10^7 strain B spleen cells cultured separately.