SOME SERUM ENZYMES IN VITILIGO

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In recent years, great attention is being paid to the increasing importance of the assay of Serum enzymes since they serve as important aids to clinical prognosis.

In an earlier communication, Velou and Santhana Gopalan (1963) suggested the usefulness of the enzymes, transaminases in this disease. The present study is concerned with the simultaneous determination of the enzymes in vitiligo. The enzymes chosen are glutamic oxal acetic transaminase (SGOT), glutamic pyruvic transaminase (SGPT) alkaline phosphatase and paraphenylene diamine oxidase (PPD Oxidase).

MATERIALS AND METHODS

For normal controls, 25 people between 16 to 48 years, apparently not suffering from any disease were selected.

For vitiligo patients, 39 persons who attended the Dermatology department of General Hospital, Pondicherry, to seek advice for their depigmentation were chosen. Of these 25 were men and the rest women. Their ages varied from 14 to 50 years and duration of the vitiligo ranged from 2 months to 20 years. The patients belonged to poor socio-economic status living in and around Pondicherry. On Physical examination, their general condition was good. The liver was not palpable in any of the cases. Also these patients were not suffering from any other disease which might elevate the values of the enzymes.

Regarding the distribution of depigmented lesion, one-third of the patients had single lesions while the remaining had at least three lesions in different locations, the commonest sites of lesions were the extremities and mucous membranes.

(i) SGOT and SGPT were estimated by the method of Reitman and Frankel (1957) and the results were expressed in terms of units of activity, eacn unit being the activity by 1 ml. of serum that results in the formation of chromogenic material equivalent to 1 microgram per ml. pyruvic acid under conditions of the test.

(ii) Alkaline Phosphatase activity was determined by the method of King (1956).

(iii) PPD Oxidase activity was measured by the method of Ravin (1956).

RESULTS AND DISCUSSION

The results are given in table I and illustrated through the scattergrams in figs 1 to 4.

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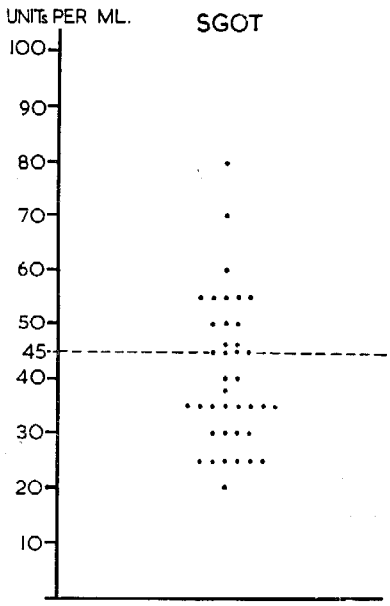

FIG 1

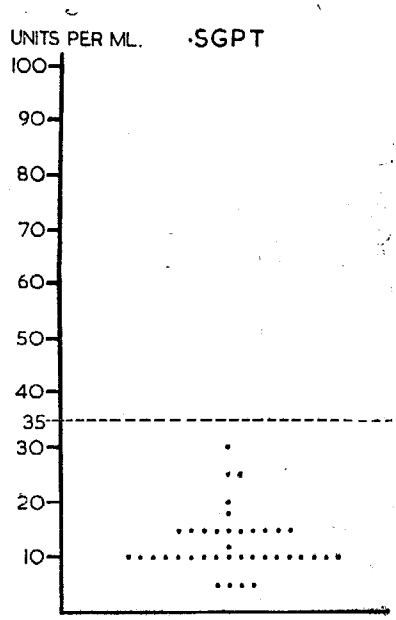

FIG. 2

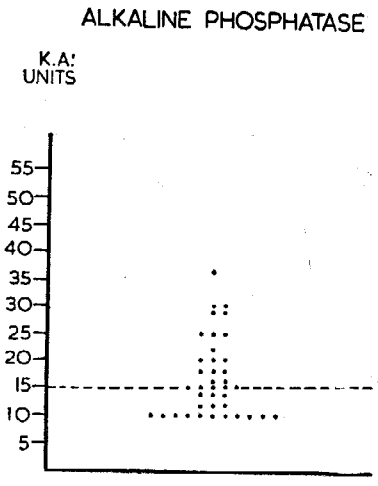

FIG. 3

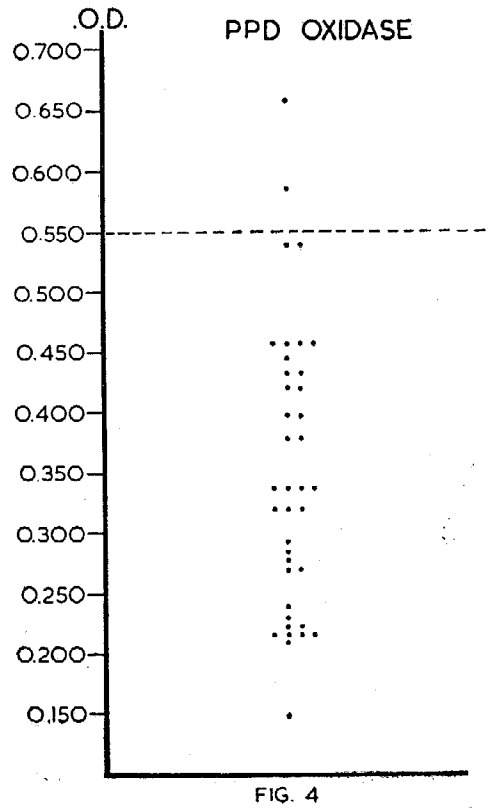

FIG. 4

(I) *Serum Trasaminases.* The mean normal values obtained in our Laboratory (concurrently with the present study) for 25 healthy adults were 18±12 units per ml. for SGOT (Range 5–45 units per ml.) and 13+10 units per ml. for SGPT (Range 3–35 units per ml.) In the present study of 39 cases, the mean for SGOT was 40.5 units per ml. (Range 20–80 units per ml.) and the mean for SGPT was 14.4 units per ml. (Range 5–65 units per ml.).

There is marked elevation of SGOT in 43% cases, although there is no marked elevation in the levels of SGPT except one at 65. Although there is high incidence of parasitic infection in the intestines in vitiligo, as reported by Lahiri (1956), Banerjee (1956) and Levei (1958), the elevation of SGOT may not be due to gastro-intestinal disturbances as it has been established that there is no rise in the levels transaminases in gastro-intestinal disease not involving the liver by Pyrse-Davies and Wilkinson (1958). The elevation of SGOT in 43% cases, may be due to the hepatic dysfunction. In the absence of liver biopsy it is not possible to confirm this.

Alkaline Phosphatase. The mean for 25 healthy adults was 10±4.6 units (King & Armstrong). The valuas obtained for vitiligo patients varied from 10 to 36 units (mean 16.9 units). The values were elevated in 42% cases. The increase in these cases may be due to hepatic involvement.

Paraphenylene Diamine Oxidase (PPD OXIDASE). The mean normal PPD Oxidase activity for 25 healthy adults done concurrently with the present study was 0.550 (Range 0.475 to 0.650) expressed as optical density at wave length 530 mu. The range of this enzyme activity in vitiligo patients ranged from 0.208 to 0.658 (with the exception of one at 0.149) and the mean was 0.350.

In our study, it is found that 80% of vitiligo patients had values lower than normal. Since 90% of total serum copper exists in the form of ceruloplasmin and as ceruloplasmin is considered to be responsible for the PPD Oxidase activity, it it reasonable to presume that the low levels of the activities of PPD Oxidase should also be reflected in the levels of serum copper. In the absence of concurrent serum copper estimations with this enzyme determination, it is not possible to confirm this. Also it has not been established that there is strict linear relationship between the levels of copper and PPD Oxidase activity, in serum.

SUMMARY

Enzyme stuides (Transaminases, alkaline phosphatase and paraphenylene diamine oxidase) were made concurrently in 39 cases of vitiligo patients.

For SGOT, the mean activity was 40.5 units per ml. while for SGPT, the mean was 14.4 units per ml. The level of SGOT was found to be elevated in 43% of cases in this study while SGPT was found to be within normal limits with one exception.

The alkaline phosphatase activity ranged from 10 to 36 units (King and Armstrong units) with a mean of 16.9 units and this enzyme activity was elevated in 42% of the cases.

TABLE I

		Range	Mean	Standard Deviation
1.	Serum Glutamic Oxalacetic Transaminase (SGOT)	20 to 80 units per ml.	40.5	14.0
2.	Serum Glutamic pyruvic Transaminase (SGPT)	5 to 65 units per ml.	14.4	10.0
3.	Serum Alkaline Phosphatase	10 to 36 units (K. A. units)	16.9	7.0
4.	Serum Paraphenylene Diamine Oxidase (PPD Oxidase)	0.208 to 0.658 with an exception at 0.149	0.350	0.116

The PPD Oxidase activity ranged from 0.208 to 0.658 with exception at 0.149 and the mean was 0.350. Eighty per cent of vitiligo patients had values lower than normal.

There was no correlation between the activities of the enzymes studied in this disease.

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