Table 2 *Water soluble P_2O_5 content (%) of triple superphosphate under different conditions*

Amount of aliquot taken (ml)	Perchloric acid medium		Nitric acid medium	
	Blank (zero P_2O_5)	Blank (2 mg P_2O_5)	Blank (zero P_2O_5)	Blank (2 mg P_2O_5)
2	43.75	–	43.75	-
4	45.32	–	43 90	–
6	43.12	43.33	43.54	43.85
7	43.25	43 50	44.72	44.10
8	–	43.75	–	43.06
9	–	43.19	–	44 16
10	–	43.37	–	43.88
Mean	44.05	43.44	44.33	43.69
C. D. (0 01)	NS	NS	NS	NS

quantity of P_2O_5 was almost similar in all the fertilizer materials under both the acid media and differences were statistically not significant. Calibration curve data obtained from taking different amounts of aliquot of triple superphosphate solution are given in table 2. It was found that different concentrations yielded 43.12 to 44.83% P_2O_5 in perchloric acid medium and 43.06 to 44.16% P_2O_5 in nitric acid medium when blank was used. However, with 2 mg P_2O_5 solution as blank, the concentrations of P_2O_5 in triple superphosphate varied from 43.19 to 43.75% in perchloric acid and 43.06 to 44.10% in nitric acid media. The results indicated that variations were smaller when 2 mg P_2O_5 was used as blank.

These results suggest the possibility of using nitric acid (Cost: Rs. 78/- per l) as the acid medium instead of perchloric acid (Cost: Rs. 406/- per l) without sacrificing the accuracy of P determination in fertilizer materials.

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GEOGRAPHICAL DISTRIBUTION OF THE GENUS *PIPER* LINN. IN INDIA

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Piper is one of the largest of the dicotyledonous genera and is distributed throughout the tropical and subtropical regions. More than 108 species have been recorded from the Indian subcontinent[1]. An investigation on the biosystematics of the genus in Karnataka region[2] provided the present author an opportunity to collect various references on the genus *Piper* and to examine more than 1020 herbarium specimens available at the Central National Herbarium (Howrah), Botanical Survey of India, Western Circle at Poona, Southern Circle at Coimbatore and the Centre for Taxonomic Studies, Bangalore, as well as the author's personal collection of about 300 specimens from the Western Ghats.

Hooker[3] recognized two distributional centres of the genus *Piper* in India viz transgangetic provinces and south Deccan. The present investigation indicated three major centres (figure 1). The first one viz the sub-Himalayan and north-east Indian centre extends from Siwalik range near Pakistan to Mismi Hills in the Arunachal Pradesh, through Kumaun, Nepal, Sikkim and Bhutan. The western half of the centre is a narrow strip comprising of the foothills of the Himalayan ranges and the eastern half is a broader region covering West Bengal, Assam, Arunachal Pradesh, Nagaland, Manipur, Tripura, Mizoram, Megalaya, Sikkim, eastern part of Bihar and Bangladesh. The second one viz the Western Ghats centre extends from Vada near Bombay to Mahendragiri near Kanyakumari through Khandala Ghats, Mahabaleshwar, Goa, Khanapur, Bababudan hills, Anaimalai hills and Cardamom hills. It is comparatively a narrow strip covering the Western Ghats and the adjoining coast and peninsula on either side. This centre also includes Biligirirangan hills (B. R. Hills). These hills, though not seen to be geographically contiguous with the Western Ghats, have a distinct floristic link with it[4]. The third one

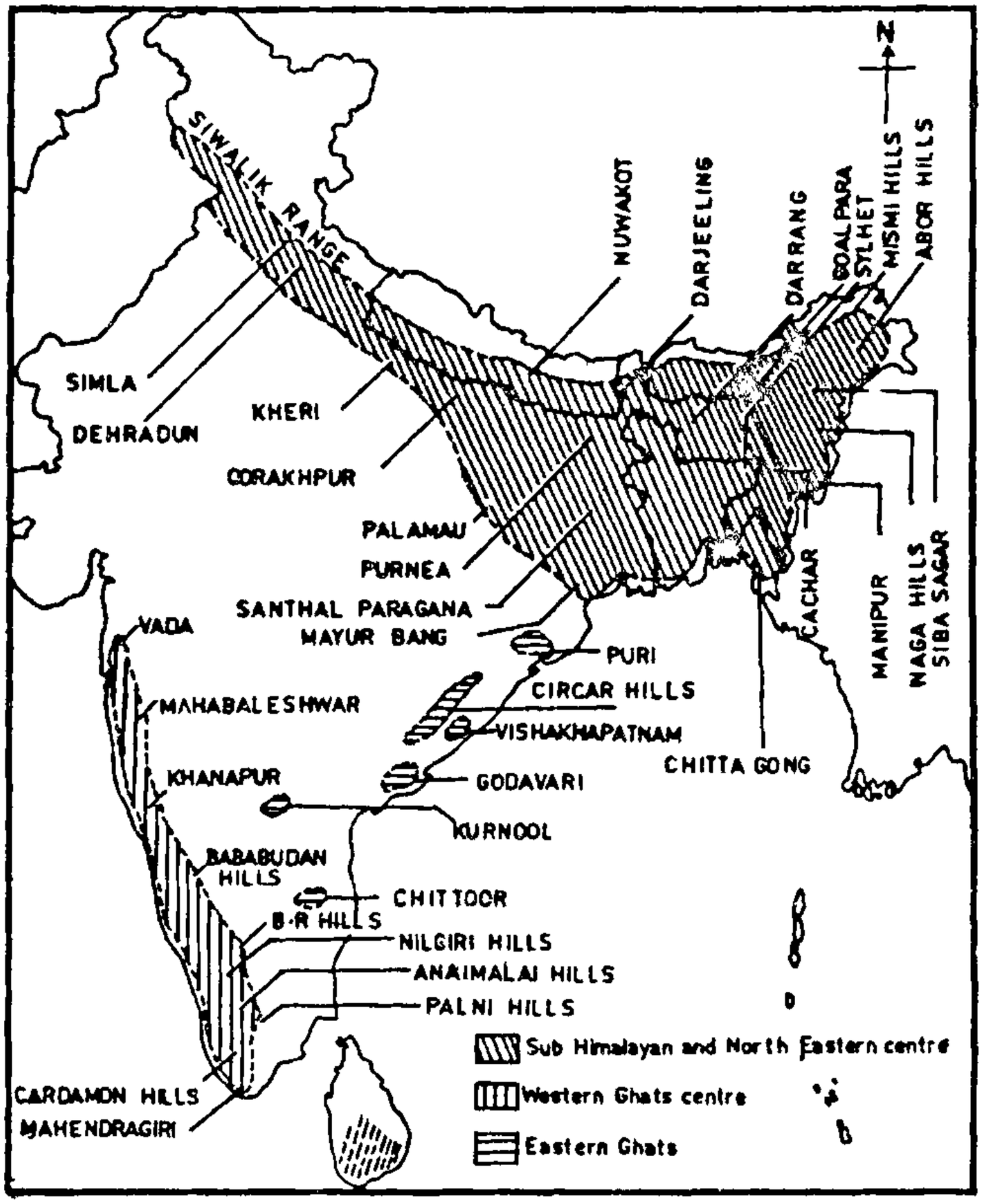

Figure 1. Map showing the distribution of the three centres of the genus *Piper* in India.

viz the Eastern Ghats centre extends from the Chittoor area in Andhra Pradesh to the Puri area of Orissa. While the distribution of the genus in the first two centres is fairly dense and continuous, the distribution is sparse and discontinuous in the Eastern Ghats. Only a few specimens are collected from Chittoor, Karnool, Godavari and the Vishakhapatnam region of Andhra Pradesh and the Puri region of Orissa. Though the distribution is discontinuous, the Eastern Ghats centre seems to connect the other two distributional centres. *Piper* species are also found in Andaman islands. Altitudewise, the distribution ranges from 50 to 2300 m above MSL[3,5]. Most of the species are confined to forest areas with large trees which provide shade and support for the climbing vines and adequate moisture throughout the year. A number of species of *Piper* reported from India do not have the name of the locality from which they have been collected and hence only 84 species of *Piper* could be assigned to their respective distributional centres. The sub-Himalayan and the north-eastern centre harbours 65 species of which 53 are endemic. The Western Ghats centre harbours 30 species of which 17 are endemic. Five species are collected from the Eastern Ghats centre and none is endemic. Three species are collected from the Andaman Islands of which two are endemic. Among the Indian taxa *P. longum* Linn. is the most widely distributed species occurring in all the three major distributional centres as well as Andaman Islands, followed by *P. betle* Linn. and *P. attenuatum* Ham. which are reported from all the three centres.

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MYONECROSIS IN SWISS ALBINO MICE FOLLOWING XYLOTOX ADMINISTRATION. CHANGES IN ALKALINE AND ACID PHOSPHATASES

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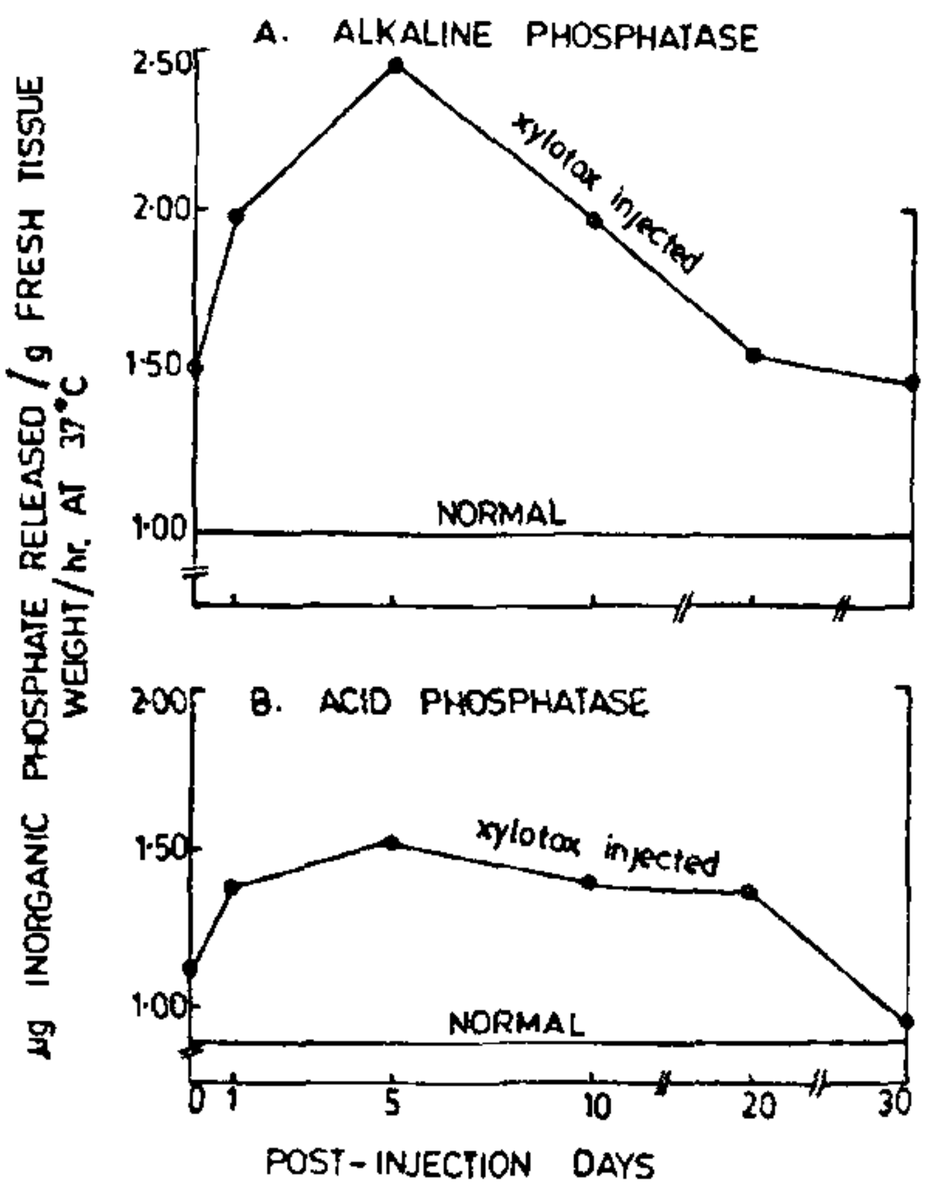
INTRAMUSCULAR injections of a variety of local anesthetics used in clinical practices produce widespread myofibrillar degeneration[1–4] followed by regeneration[1,5,6]. This degeneration/regeneration process has been well documented in a number of histopathological studies. Myonecrotic effects which persist for few days include incorporation of polymorphonuclear leukocytes and macrophages at degenerative sites and also displacement of myonuclei in some fibers. Regeneration reverses this process[6]. However, biochemical events i.e. reactions in initiation and progression of this myofibrillar degeneration and regeneration have not been characterized. But for the scant reports on correlation between serum enzyme levels and histopathological disturbances following local anesthetic administration[4], no one has ever been interested in following the sequence of enzymic changes during this process especially those enzymes with a lytic function in the affected muscle fibers. We report in this communication the status of two lytic enzymes viz acid and alkaline phosphatases working at widely different pH optima, during myofibrillar degeneration/regeneration following a local anesthetic adminstration. The phosphatases have been shown to have an intimate association with a number of muscle diseases including neuromuscular disorders[7–11].

Five repeated doses of 50 µl of 0.2%(v/v) xylotox (lignocaine hydrochloride) at 8 hr intervals were administered in the *gastrocnemius* muscle of Swiss albino mice. A total of 36 animals were injected the local anesthetic and three mice sacrificed every time (0, 1, 5, 10, 20, 30 days following last injection) for the quantitative estimation of each of the phosphatases in the target muscle[12,13]. Striking variations in the levels of both acid and alkaline phosphatases resulted within hours after the last injection (0 day). Peak values in enzyme levels were recorded between the 5th and 10th day which remained considerably elevated till the 20th day (figures A and B). Beyond this post-injection period, the enzymic contents, however, witnessed a decline towards the normal levels. This pattern of variation in lytic enzymes is absolutely in parity with our earlier report[6] that the maximal myofibrillar degeneration under identical experimental conditions occurred around 15-20 days following xylotox administration.



Figures A and B. Alterations in the levels of alkaline and acid phosphatases in xylotox injected *gastrocnemius* muscle. Early elevation in the enzyme levels is characteristic. 0 day indicates 2 hr following xylotox administration.