

## SHORT COMMUNICATIONS

### EFFECT OF CHRONIC SMOKING ON LIPOPROTEINS

E. PADMINI and D. B. MOTLAG

Department of Biochemistry, University of Madras,  
Madras 600 025, India.

SMOKING is one of the major and easily correctable coronary risk factors. Medical profession has recognized the need to curb smoking and the campaign against smoking is gathering momentum. However, the exact mechanism by which smoking promotes coronary artery disease is yet to be established clearly. Smoking-induced changes in blood lipid chemistry could offer a partial explanation<sup>1,2</sup>. The present investigation deals with the lipoprotein profile changes among chronic smokers and chronic smokers with myocardial infarction [MI] from Madras. The incidence of risk factors for heart disease changes from place to place due to food habits, type of work and ethnic origin<sup>3</sup>.

The subjects considered for the study were classified as (i) controls [non-smokers], (ii) chronic smokers (20-25 cigarettes/day for the past 15 years<sup>3</sup>) and (iii) chronic smokers who have developed myocardial infarction (patients) of age between 40 and 45 years. The bio-data of all the 25 persons in the first and the second groups ensured normal health while the third group consists of patients without diabetes. Fasting blood samples were collected and the serum separated for the estimation of lipoprotein by agarose gel

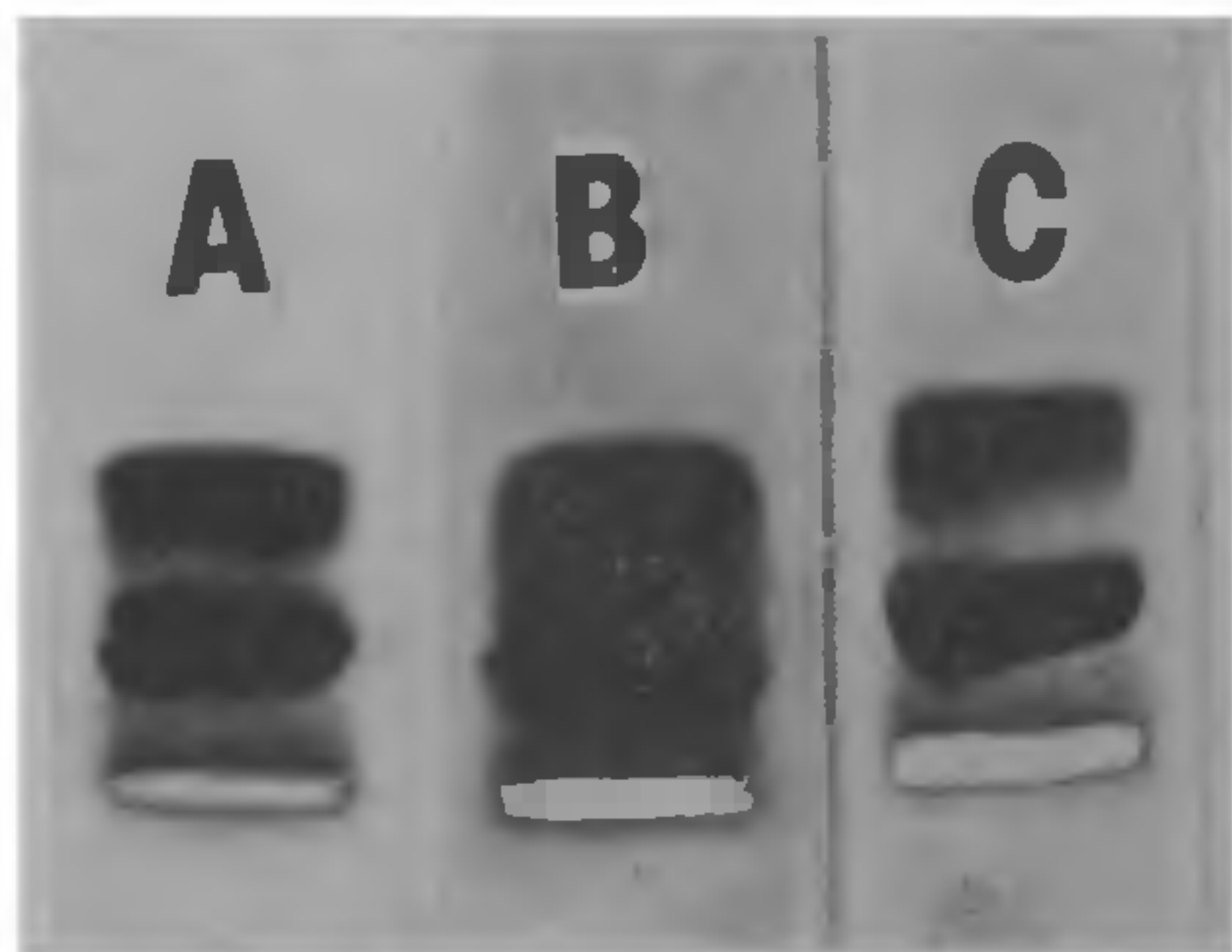


Figure 1. Plasma lipoprotein pattern on slides. A. Control; B. Chronic smokers; C. Chronic smokers with myocardial infarction.

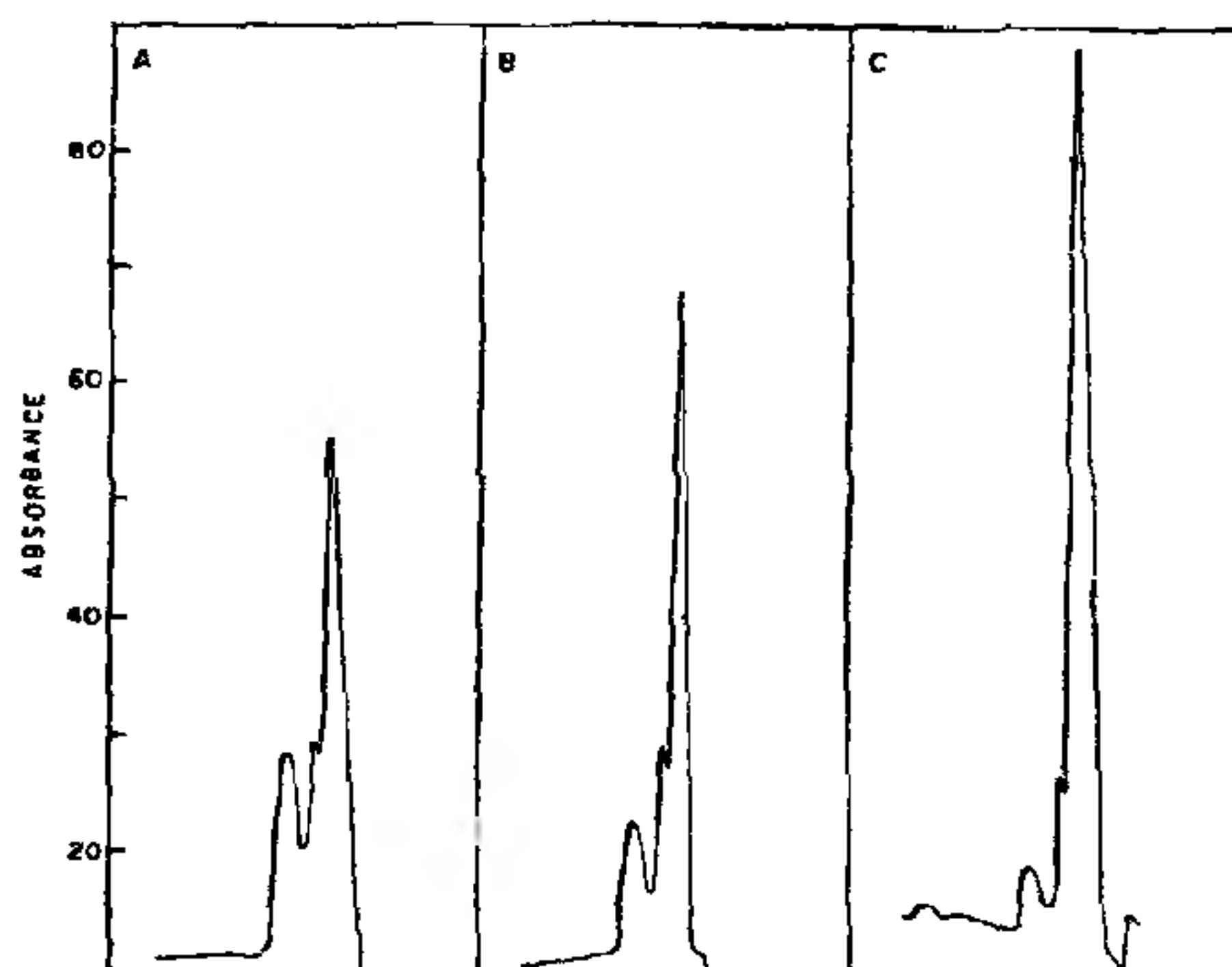


Figure 2. Plasma lipoprotein gel scanning pattern, A. Control, B. Chronic smokers, C. Chronic smokers with myocardial infarction.

electrophoresis<sup>5</sup> and were later scanned in Shimadzu dual wavelength (Tcl Scanner CS 910).

The lipoprotein pattern of all the three groups is presented in figure 1. The scanned peaks are indicated in figure 2. The concentration peak of high density lipoprotein (HDL) in smokers and smokers with MI is low when compared to controls while the low density lipoprotein (LDL) peak is high in both groups. The VLDL peak does not show much variation.

The prospective study of American Cancer Society showed that chronic smokers who are aged 40-49 and who smoke 20-30 cigarettes a day, had a relative risk of MI four times more than non-smokers<sup>3</sup>. One of the important reasons for the high risk factor for smokers may be the changes in the lipoprotein fractions. Each fraction has a different role to play in metabolism. The concentration of HDL has been recognized as an important and independent preventive factor in coronary heart disease<sup>6,7</sup>. Eisenberg has reported that HDL particles contribute to the removal of esterified cholesterol from arterial smooth muscle cells. On the other hand, LDL is reported to be atherogenic<sup>9</sup>, as 50% of its concentration is cholesterol. Thus the decrease in HDL and increase in LDL among smokers may be a factor making them susceptible to atherosclerotic condition which leads to the heart disease as observed in smokers with MI.

31 October 1986; Revised 24 March 1987

1. Kershaw, A. and Bellets, A., *J. Am. Med. Assoc.*, 1964, **187**, 32.
2. Pozner, H. and Billimoria, J. D., *Lancet*, 1970, **1**, 1318.
3. Hammond, E. C., *Natl. Cancer Inst. Monogr.*, 1966, **19**, 127.
4. Nestel, I. and Zimmet, S., *Atherosclerosis*, 1981, **1**, 257.
5. Weime, R. J., *Arscia vitgaren brussels*, (ed.) N. John, New York, 1959, p. 25.
6. Kannel, W. B., Dawber, T. R. and Friedman, G. D., *Ann. Int. Med.*, 1964, **61**, 888.
7. Miller, N. E., Thelle, D. S. and Forde, D., *Lancet*, 1977, **1**, 965.
8. Eisenberg, S., *J. Lipid. Res.*, 1984, **25**, 1017.
9. Mjos, O. D., Rao, A. and Honden, T., *Atherosclerosis*, 1974, **39**, 75.

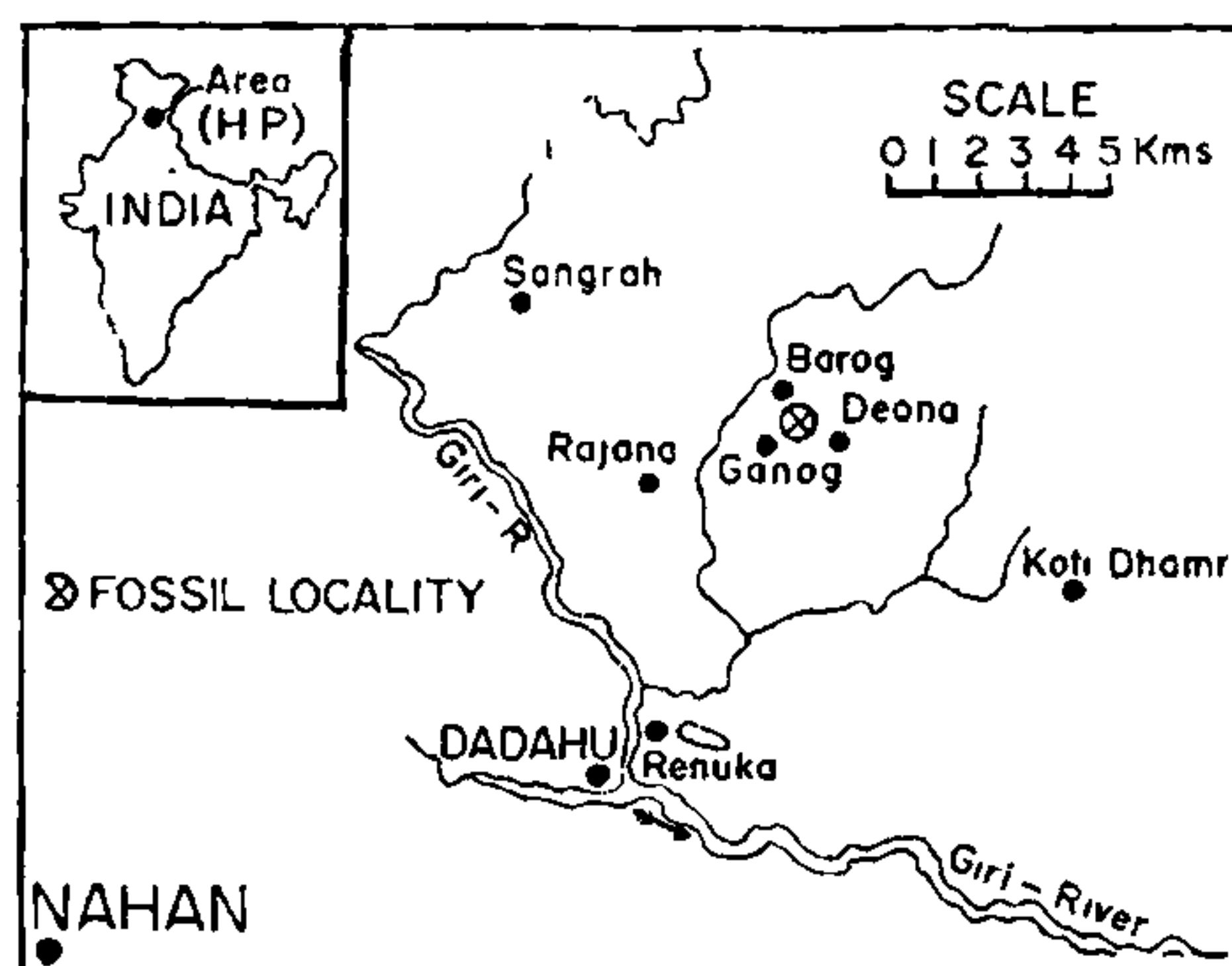


Figure 1. Location of fossiliferous horizon.

## REDLICHIID TRILOBITES FROM THE TAL FORMATION, LESSER HIMALAYA, INDIA

GOPENDRA KUMAR, ASHUTOSH JOSHI and V. K. MATHUR

Himalayan Geology Division, Geological Survey of India, Lucknow 226 020, India.

THE note records the discovery of redlichiid trilobites and associated brachiopods from the Phulchatti Member (Upper Tal) of Tal Formation exposed in the western part of the Nigalidhar Syncline on southern slopes of the ridge about 800 m N.70°E. of Ganog, Sirmur District, Himachal Pradesh, India (figure 1). So far, no trilobites were recorded from the Lesser Himalaya, though there were recent finds of other fossils from the Tal Formation from the adjoining Mussoorie and Garhwal synclines in the eastern part of the Krol belt which includes earliest skeletal microfauna<sup>1-4</sup>, stromatolite<sup>5</sup>, archaeocyatha and calcareous algae<sup>6</sup>, microgastropod and brachiopod<sup>7</sup> mainly from the 'Lower Tal' (Chert-Phosphorite to Calcareous members<sup>8</sup>). These fossils, in addition to records of varied type of trace fossils<sup>7,9-11</sup> and trilobite impressions<sup>12</sup>, have helped in fixing the age of the 'Lower Tal' to Precambrian—Early Cambrian (Meishchucunian to Qiongzhusian Stages) in contrast to well entrenched a probable Mesozoic age<sup>13</sup> and more recent Cambro-

Ordovician<sup>14,15</sup>. The other fossil records are of rich brachiopod fauna from the basal part of the Phulchatti Member (Upper Tal) referable to the Botomian Stage of Early Cambrian<sup>16,17</sup>. Though this brachiopod horizon was chronostratigraphically favourable and lithostratigraphically correlatable to the trilobite bearing Tsanglangpuian (? = Botomian) Stage of China<sup>18</sup>, no trilobites were recorded from it till now.

The trilobites and the brachiopods occur in a grey to greenish grey flattened-nodular rusty weathering shale with intercalated thin greyish white arenite bands (Shale Member<sup>19,20</sup>) 245 m above the base of Phulchatti Member (figure 2). The preservation of individual elements of the fauna is excellent. The trilobite fossil remains are dominated by cranidium (figure 3). Some of the trilobites show broken but well-preserved thoracic parts (figures 4a, b). Complete carapaces, though not common, are also present (figure 4d). The brachiopod fossils form similar clustered facies as has been reported from Mussoorie area<sup>16,17</sup> with identical elements. The brachiopod fossils have not been studied in detail for the present.

**Trilobites:** *Redlichia noetlingi* (Redlich) (figures 3a, c, f) and *Redlichia* sp. (figures 3b, d, e and 4a, b), trilobite gen et sp. Indet. (figures 4c, d).

**Brachiopods:** *Obolella* sp. and *Lingulella* sp.

The present find of redlichiid trilobites (*Redlichia noetlingi*) in fair abundance proves beyond doubt an Early Cambrian (Tsanglangpuian Stage) age for the lower part of the Phulchatti Member of Tal Formation as assigned earlier on the basis of brachiopod