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ABSTRACT. Genetic variation at the locus controlling A1 band of erythrocyte esterase was found in the Japanese macaque, *Macaca fuscata*. Existence of four alleles, Es-A11, Es-A12, Es-A13, and Es-A14, controlling the mobility of the band and codominance relation between them were postulated. A majority of the troops examined were monomorphic in Es-A1 phenotype, and the variant phenotypes were observed to occur only in Yugawara-Ihama, Arashiyama, and Koshima areas.

INTRODUCTION

The genetic polymorphisms of several kinds of enzymes have been found in troops of *Macaca fuscata*, although the polymorphic loci are generally not so frequent (ISHIMOTO & KUWATA, 1972; SHOTAKE & NOZAWA, 1974; SHOTAKE, 1974; SHOTAKE & OHKURA, 1975; SHOTAKE et al., 1975). The genetic variability of the Japanese macaque troops is interesting from the point of view of population genetics, especially in connection with the population structure of this species. We have been continuing this line of work for more than four years.

The present article will add a survey result on the erythrocyte esterase (Es) polymorphism within and between troops of Japanese macaques to the previous report of this series.

Es from primate red cells is at present classified into eight types, namely, A1, A2, A3, B, C, P, CAI, and CAII (TASHIAN, 1965). Among these types, A1 esterase was found to show the clearest bands with our technique and the phenotypes of A1 esterase seemed to be controlled by four codominant alleles.

MATERIALS AND METHODS

A total of 1,273 blood samples were collected from 34 (or more) troops of the Japanese macaque, *Macaca fuscata* (Fig. 1 & Table 1). The collected blood samples were stored in the manner described in the first report of this series (SHOTAKE & NOZAWA, 1974).

Electrophoresis was performed on 6 mm × 100 mm × 200 mm plate with a 12% horizontal starch gel, using a borate-NaOH buffer system of pH 8.0, at a constant current of 60 mA/gel for about 3 hours at 4°C. The gels were then sliced and stained.
with a reaction buffer containing α-naphthyl acetate as substrate. The incubation was carried out at 36°C for less than 3 hours. The procedure adopted was the same as the method described by Shaw and Prasad (1970).

As described later in detail, the area where the bands appear shifts anodally with time of storage (in freezing condition) after blood sampling. Such a phenomenon has already been observed in A1 band of human erythrocyte esterase by Tashian and Shaw (1962) and Tashian (1965). Then, the examinations of phenotype were made after the position of the bands stabilizing (after 2 months storage).

RESULT AND DISCUSSION

The red cell esterase of the Japanese macaques were identified, from the shapes and mobility of the bands, as A1 esterase (acetylersterase) described in Tashian (1965, 1969). Its activity was not inhibited by eserine. Esterase A1 was polymorphic in five troops of the Japanese macaque, and some variations were found also in a group of individuals whose original troops were unknown.