Platelets play key role in transport of enzyme as well as proteins critical to clotting, formation of a platelet plug to slow blood loss and contraction of a clot after it has formed, which then reduces the size of the vessel break. Erythrocytes in the body play a vital role in gaseous exchange from lungs to the tissues and vice-versa. Transmission electron microscopic studies on platelets of sheep and pig have been recently documented by Kumar et al. (2012) and Mehta et al. (2013), respectively. However, information on platelets and erythrocytes of dog are meager in India hence, the present study was conducted.

MATERIALS AND METHODS

The study was conducted on 6 apparently healthy dogs around College of Veterinary Sciences and Animal Husbandry, Kanke, Ranchi. Five ml of blood was taken from the cephalic vein in a sterilized and siliconized tube containing EDTA as anticoagulant and centrifuged at 3000 rpm for 30 minutes. The excess of plasma was drained off leaving a small amount over the buffy coat. Then 2-3 ml of modified Karnovsky’s fluid was poured along the sides of test tube drop by drop without disturbing the buffy coat for fixation and formation of buffy coat plug. The buffy coat plug along with red blood cell coat was taken out of the tube with the help of hooked needle or wire and placed in petri dish containing phosphate buffer. The plug was cut into thin and small slices of approximately 1 mm thickness. The samples were submitted in phosphate buffer at pH 7.2 to the electron microscopy facility at AIIMS, New Delhi for further processing. These sections were then placed on grids and examined under JEOL electron microscope at College of Veterinary Sciences, G.B. Pant University of Agriculture and Technology, Pantnagar.

RESULTS AND DISCUSSION

Platelets were non-nucleated, elongated, irregularly rounded, and club shaped. The platelets were differentiated into peripheral, sol-gel and granular zone. The peripheral zone was composed of cell membrane and cytoplasmic matrix whereas the sol-gel zone had different shaped and sized vacuoles. The granular zone comprised of few organelles and different types of granules. Three types of granules were seen in granular zone. One type of granules was moderately electron dense and round to irregular in shape, second type of granules was electron lucent with electron dense spot and third type were comparatively electron dense with electron lucent patched and smaller size. The erythrocytes were elongated and curve in shape and devoid of cytoplasmic organelles.

Key words: Dog, Erythrocytes, Platelets, Transmission electron microscopy
dense material within them. Granular zone comprised of few organelles and different types of granules. These finding were in agreement with the statements of Singh et al. (1997), Menaka and Singh (2002) in goat and Mehta et al. (2013) in pig. Granules were few in number. One type of granules was moderately electron dense and round to irregular in shape (Fig. 3). The second type of granules was electron lucent with electron dense spot (Fig. 1). The third type of granules was moderate electron dense and smaller in size (Fig. 1). According to Menaka and Singh (2002) in goat the first type of granules had electron dense margin, second type were filled with granular material and the third type of granules were having an eccentrically placed highly electron dense material of variable size. Whereas Kumar et al. (2012) stated that in sheep the platelets consisted of four types of granules. One type of granule was electron dense while the second was electron lucent. The third type of granule was crystalloid in appearance with finger like projections inside them and the fourth type was large in size and had centrally or eccentrically placed electron dense material. Mehta et al. (2013) identified three types of granules in pig, where one type of granules was homogenously electron dense varied greatly in size and were round, oval or elongated in shape. The second type of granules was large in size with patches of electron dense materials located towards one pole of the granules. The third type was also large in size having centrally placed electron dense materials surrounded by a clear ring.

The erythrocytes were elongated and curved in shape which varied in size, homogenous and devoid of cytoplasmic organelles (Fig. 4). Singh et al. (1997) reported that erythrocytes were thin, flat and elliptical or oval in outline with no intracellular organelles in camel. Singh (2000) observed homogeneously stained erythrocytes with no cytoplasmic organelles in buffalo calves.

REFERENCES

