sional symmetries of the crystal. In the first approximation, the two-dimensional symmetry of the projection at the zone determines the diffraction symmetry and the symmetry of the pattern only has the symmetry of the projection. When measurements are sufficiently accurate, or cover a sufficient angular range, the symmetries must be derived from the three-dimensional space group in the way indicated.

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Binding of 25-hydroxy vitamin D_2 to plasma protein in New World monkeys

BELSEY *et al.*[1] have shown that the lower potency of ergocalciferol (D_2) compared with cholecalciferol (D_3) in chicks is reflected in a weaker binding of D_2 metabolites to the plasma transport proteins. Further investigations in other species known to be resistant to D_2 were recommended[1] to establish whether similar correlations exist between biological activity and binding to transport proteins. Since New World primates (Cebidae) utilise D_2 less efficiently than D_3 (refs 2–4) we examined the transport proteins in four species of New World monkeys to test whether they also discriminate against D_2 metabolites.

A competitive protein binding assay involving the displacement of ^{3}H-25-OH-D_3 from the specific plasma transport proteins by 25-OH-D_2 and 25-OH-D_3 was used to test the relative binding of these two metabolites of D_2 and D_3.

In the assay system with plasma from the monkey *Cebus albifrons*, increasing amounts of 25-OH-D_2 and 25-OH-D_3 produced similar reductions of the bound ^{3}H-25-OH-D_3 (Fig. 1) indicating equivalent binding of the two steroids by the *C. albifrons* transport protein. A similar result was obtained for the three other primates tested—*C. capucinus*, *Aotus trivirgatus*, and *Callithrix jaccus*. Old World monkeys (Cercopithecidae) utilise D_3 and D_2 with equal efficiency[3] and in the three Old World primate species we studied (*Erythrocebus patas*, *Macaca mulatta, and Papio anubis*) the transport proteins exhibited equal affinity for 25-OH-D_2 and 25-OH-D_3.

There are differences in the type of protein used by the species examined in this study for vitamin D transport. *C. albifrons* and *C. capucinus* use albumin[6] whereas the two other New World and

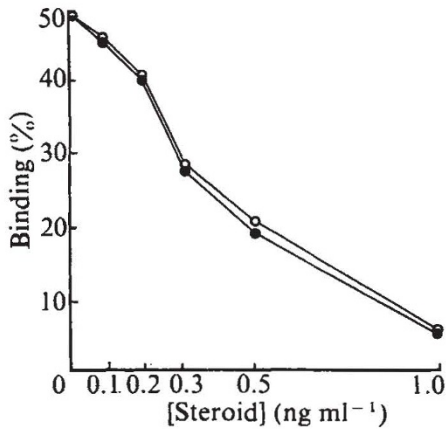

Fig. 1 Competitive displacement of ^{3}H-25-OH vitamin D_3 from *C. albifrons* plasma with increasing amounts of non-labelled vitamin D analogues. Each point is the mean of two determinations. ○, 25-OH-D_2; ●, 25-OH-D_3.

the three Old World primates use an α-globulin fraction[6]. The seven primates studied only have a single transport protein[6] whereas the chick has two proteins which exhibit β-globulin mobility on gel electrophoresis[6,7]. Although two types of protein are used for vitamin D transport in these primates their binding properties for 25-OH-D_2 and 25-OH-D_3 are similar.

The results obtained for the steroid binding properties of the New World monkey transport proteins are in contrast to those of the chick proteins which do discriminate against D_2 metabolites[1], an observation we were able to confirm. From this, it would seem that the resistance of New World primates to vitamin D_2 is a result of other differences. These may involve inefficient binding of D_2 and 25-OH-D_2 by intracellular vitamin D binding proteins in liver or kidney respectively or discrimination against the active kidney metabolite 1,25-$(OH)_2$-D_2 by the binding proteins present in target organs such as muscle, gut and bone.

The variations between the binding properties of New World primate and chick transport proteins for 25-OH-D_2 illustrate the difficulty of postulating a general theory of D_2 resistance. These differences confirm that the process of discrimination against D_2 in species resistant to this vitamin cannot be explained uniformly by the properties of the plasma protein as evidenced by the chick. It seems, therefore, that a wider survey of vertebrates known to be resistant to D_2 is required to correlate the random observations made in individual species.

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Ultraviolet viewing with battery-operated television camera

LAVIGNE and Oritsland[1] have shown that ultraviolet photography can be used usefully for the detection of white animals on snow. Polar bears, for example, ordinarily match their background and may be difficult to spot, certainly from a distance, but when photographed in the near ultraviolet band of the electromagnetic spectrum (300–400 nm) they appear as black bodies, sharply contrasted against the snow. The technique is said to have application for the remote sensing of polar bears in the field. We suggest that ultraviolet detection can also be carried out conveniently with a television camera. Such cameras are intrinsically sensitive to the near ultraviolet band, and to be used for ultraviolet viewing need only be outfitted with an ultraviolet-transmitting lens and filter. We have used the technique for viewing ultraviolet contrast patterns on flowers and butterflies[2], but it should also lend itself to detection on snow of animals which absorb in the ultraviolet. Though conventional, portable video systems, suitable for use in the field, include both a camera and a recorder, the recorder can be disconnected easily, and the camera can be converted to a self-contained viewer if it is fitted with a battery pack attached to the housing. The disconnection of the recorder decreases the vertical resolution of the camera's monitor (because of the loss of scan synchronisation pulses from the recorder), but the quality of the image is adequate for most purposes (full resolution can be restored by the installation of an oscillator and appropriate divider circuits on the camera). Such cameras provide compact, manageably light, and relatively inexpensive, ultraviolet image transducers.

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