

The antirachitic effect of ergot / by E. Mellanby, E.M. Surie, and D.C. Harrison.

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The antirachitic effect of ergot. By E. MELLANBY, E. M. SURIE
AND D. C. HARRISON.

In the course of feeding experiments in which ergot of rye was added to the diet, it was noticed, although the experiments were carried out for quite another object, that this substance had a definite, and, in the case of some specimens, a powerful antirachitic action. It is difficult to get young dogs to eat more than 2 to 4 grm. of ergot daily because of its general toxic effect, but even in these quantities its power to promote calcification is striking. The general trend of recent work on the subject of the calcification of bones has been to emphasise the fact that calcification, whether specifically induced by food or by ergosterol after irradiation by ultra-violet rays, is due to one factor, the antirachitic vitamin first described by one of us in 1918 (1). It seemed most probable, therefore, that the antirachitic action of ergot was due to the presence in it of vitamin D. This was of particular interest because it will be remembered that ergot was the substance from which ergosterol was first isolated by Tanret (2) in 1889. It is possible that Tanret actually obtained vitamin D with the ergosterol.

Up to the present time, however, it has not been possible to prove definitely that the antirachitic substance in ergot is vitamin D. Like vitamin D it is soluble in alcohol and can be removed by it from ergot. On evaporating off the alcohol the active substance can be dissolved in ether, leaving an insoluble resin, free from calcifying influence. If, after removal of the ether, the fatty residue be saponified by alcoholic potash and extracted with petrol ether, then the active substance, if it is vitamin D, ought to be in the extract together with the other unsaponifiable substances. Ergosterol is present, but so far most of the calcifying factor has been left in the soap, traces only being associated with the inactive ergosterol. It is hoped by using other solvents to separate this factor entirely from the soap.

If the calcifying action of ergot is due, as seems most probable, to vitamin D the question must be faced as to its mode of production. It is possible that it may have its origin in the action of sunlight on the ergosterol of the developing ergot. On the other hand, ergot has a bluish-black covering which is probably impenetrable to radiations, and this suggests that the active factor may be produced directly from ergosterol in ordinary growth independently of sunlight.

1. Mellanby, E. *This Journ. Proc.* 52. pp. xi. and liii. 1918.
2. Tanret. *Compt. rend. Acad. Sci.* 108. 98. 1889.

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