Diäthyl-*p*-Nitrophenylphosphat (E 600) nicht durchgeführt wurden, handelt es sich bei der von uns nachgewiesenen Esterase sowohl um die lysosomale als auch mikrosomale Fraktion dieses Enzyms. Wenn den histochemischen Methoden auch der Vorteil der Lokalisation zukommt, so ist durch ihre Anwendung allein eine exakte Aufklärung von Stoffwechselvorgängen im Gewebe nicht möglich. Ob es sich also bei der auffälligen Verminderung der Reaktionsprodukte bei behandelten Tieren um einen Substanzverbrauch oder um eine tatsächliche Aktivitätsminderung handelt, lässt sich nicht sicher entscheiden und müsste quantitativ biochemisch oder zumindest elektronenmikroskopisch-zytochemisch nachgeprüft werden. Das Vorkommen lysosomaler Esterase im normalen menschlichen Endometrium während eines biphasischen Zyklus mit einem Fermentminimum in der späten Sekretionsphase wurde als ein Gelbkörperhormoneffekt angesehen (GARCIA-BUNUEL und D. BRANDES[3]). Dort kommt es offenbar mit der Sekretion der Uterindrüsen zur Auflösung der Lysosomen und damit zu einer Abnahme der histochemisch nachweisbaren Esteraseaktivität. Ähnlich dürften auch unsere Befunde zu deuten sein, nach denen die Gestagenkomponente der Ovulationshemmer für die Verminderung der Esteraseaktivität verantwortlich zu machen ist[4].

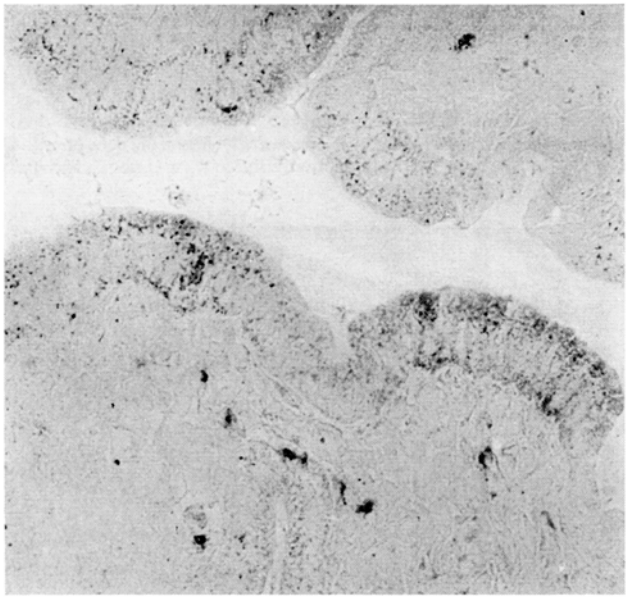

Fig. 2. Meerschweinchenuterus (2 Dragées «Anovlar» pro die, 10 Tage lang). Im Cavumepithel nur noch spärliche Reaktionsprodukte. × 350.

Summary. Histochemical investigations were carried out in the endometrium of guinea-pigs after administration of 'Anovlar' (4 mg ethinylnortestosterone-acetate and 0.05 mg ethynylestradiol). Histochemically a decrease of non-specific esterase activity was found in the endometrial as well as in the glandular epithelium after 'Anovlar' treatment. The relationship of this enzyme to synthetic steroid hormones is briefly discussed.

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Arthritogenicity and Protective Effect Against Adjuvant Arthritis of Wax D_S Fractions (Glycolipids Without a Nitrogen-Containing Moiety) of *Mycobacterium tuberculosis* var. *hominis* and *bovis*

Waxes D from *Mycobacterium tuberculosis* var. *hominis* (as strain Canetti) are macromolecular peptido-glycolipids with important biological properties (FREUD's adjuvant effect[1]; induction of adjuvant arthritis[2]) related to the presence of the nitrogen containing moiety[3] (amino acids and amino sugars). By ultracentrifugation in ether, JOLLÈS et al.[4] were able to isolate a 'light' ether-soluble fraction, free from amino sugars and amino acids (wax D_S, without adjuvant effect) and 'heavy' fractions (waxes D_P), sedimentable after different time intervals, containing amino sugars and different amounts of a peptide moiety with alanine, glutamic acid and meso-α,α'-diaminopimelic acid, in approximate molar ratios 3:2:2 and possessing the adjuvant effect. Waxes D from *M. tuberculosis* var. *bovis* (as strain Marmorek) contain usually only the 'light' ether-soluble fraction (wax D_S).

Preliminary experiments by LACAPÈRE[5] have shown that the arthritis-inducing ability of wax D_S fractions in rats is very weak when compared with that of D_p fractions. The arthritogenicity of wax D_P fractions is lost after acetylation[6–9]. We recently indicated that rats injected with an acetylated way D_P were protected against the arthritis-inducing ability of unaltered wax D_P not only when the acetylated wax D_P was injected 40–300 days before the unaltered wax D_P[8], but also when the acety-

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Arthritogenicity in rats of wax Dp and D_S fractions and protective effect of wax D_S or acetylated was Dp fractions against wax Dp arthritis

Wax D	mg	No. of rats	Arthritis in:	Severity[a]	Remaining symptoms[b]
Canetti D_{P35}	0.25	12	12/12	+++++	+++
Canetti D_{P35} acetylated	0.25	22	0/22	–	–
Canetti D_S	or 0.25 0.50	12	2/12	+ +	+ 0
Marmorek D_S	or 0.25 0.50	15	0/15	–	–
Canetti D_{P35} acetylated + Canetti D_{P35} (40 or 300 days later)	0.25 + 0.25	18	3/18	1 + 2 ++	0 +
Canetti D_S + Canetti D_{P35} (40 days later)	0.25 + 0.25	4	4/4	+	0
Marmorek D_S + Canetti D_{P35} (40 days later)	0.25 + 0.25	15	7/15	2 + 5 ++	+ +
Canetti D_{P35} acetylated + Canetti D_{P35} (the same day)	0.25 + 0.25	10	4/10	1 + 2 + 1 ++	0 + ++
Marmorek D_S + Canetti D_{P35} (the same day)	0.25 + 0.25	9	9/9	++++	+++

[a] Severity: +, ++, slight; +++, ++++, with osteite; +++++ malformation and ankylosis of the articulations. [b] Remaining symptoms: +, slight; ++ mean; +++ severe.

lated and the unaltered waxes Dp were injected together[10]. In this relationship, we want to report some results obtained with wax D_S fractions from human and bovine origins.

Adjuvant. The following formula was used: 9 mg of wax D_S from *M. tuberculosis* var. *hominis*, strain Canetti or 9 mg wax D_S from *M. tuberculosis* var. *bovis*, strain Marmorek, 4 ml vaseline oil, 1 ml Tween 80, 4 ml saline for injection. For comparisons, some assays were made with a wax D adjuvant known by previous tests to be potently arthritogenic[11] (wax D_{P35}, strain Canetti). 0.25 or 0.5 ml of adjuvant is injected intradermically to each animal in the right hind foot-pad. Rats (Wistar origin) 8–10 weeks old were used. The method of scoring arthritis was previously reported[8,10].

Arthritogenicity of waxes D_S. Wax D_S Canetti (12 rats, 8 males and 4 females): 8 rats were tested with 0.5 ml adjuvant and 4 with 0.25 ml. 10 rats developed no arthritis; mild arthritis appeared in 2 animals, 1 tested with 0.50 ml adjuvant and the other with 0.25 ml; in 1 case the slight lesions disappeared quickly.

Wax D_S Marmorek (15 rats, 7 males and 8 females): 13 rats were tested with 0.25 ml adjuvant and 2 with 0.5 ml; none developed arthritis. The injection of wax D_S in the foot-pad provoked an edema which diminished after 48 h and disappeared completely after 15 days. A highly arthritogenic wax Dp provoked an edema which is followed by an inflammatory reaction until the apparition of the arthritis.

Protective effect of waxes D_S. Injection of the arthritogenic wax Dp 40 days after wax D_S. 4 rats injected with wax D_S Canetti in adjuvant (0.25 ml) and 15 rats injected with wax D_S Marmorek in adjuvant (0.25 ml) were reinoculated after 40 days with the potently arthritogenic wax D_{P35} Canetti in adjuvant (0.25 ml). Very mild arthritis appeared when wax D_S Canetti was employed: no symptoms remained after the inflammatory period. 8 rats injected with wax D_S Marmorek developed no arthritis, 2 a very slight one, and 5 a mild one.

Simultaneous injection of the arthritogenic wax Dp and wax D_S. 9 rats were tested with a mixture of waxes D_S Marmorek and D_{P35} Canetti in adjuvant (0.25 + 0.25 ml). This injection provoked in all animals the same phenomena as the injection of the arthritogenic wax alone: arthritis developed in 13 days and all the extremities and the tail were affected.

Conclusion. Our results indicate (Table) that waxes D_S and the acetylated waxes Dp[8,9] which both develop no arthritis in rats, have a similar effect when an arthritogenic wax is injected 40 days later in these same rats[9] but their behaviour is quite different[10] when the arthritogenic wax is injected simultaneously. A detailed quantitative study of the related phenomena is actually under progress.

Résumé. Les cires D_S des Mycobactéries (souches humaines et bovines), glycolipides dépourvus de la partie azotée présente dans les cires Dp, ne provoquent pas d'arthrite chez le rat; contrairement aux cires Dp acétylées, elles ont un effet protecteur vis-à-vis d'une cire Dp arthrogène seulement si elles sont injectées 40 jours avant cette dernière.

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