jecting various doses of oxytocin i.v. into anaesthetized mothers while young were actively sucking and comparing weight of milk obtained by young expressed as percent litter body weight with normal values. Nembutal (3 mg/100 g) blocked milk let-down reflex and prevented removal of milk by the young. .05 USP/kg oxytocin restored normal milk withdrawal; .02 USP/kg did not. Much greater yields were obtained with .1 USP/kg. Milk flow commenced with all doses after latent period of 5-10 seconds and lasted 4-5 minutes. It is concluded that normal 14 day postpartum lactating rats vary in amount of release of oxytocin following nursing stimuli from less than .02 to .1 USP/kg.

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Received March 12, 1957. P.S.E.B.M., 1957, v95.

Antigenicity of Egg White Proteins in the White Mouse.* (23143)

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It has been well demonstrated by a variety of technics(1-3) that diverse antibodies other than anti-ovalbumin are present in "specific" antisera directed against crystalline ovalbumin. Indeed, Vaughan and Kabat(4) have demonstrated that, in addition to anti-conalbumin, anti-ovomucoid and anti-lysozyme, antibodies exist in such sera as a result of the antigenic stimulation of hitherto unidentified egg white impurities in ovalbumin. In attempting to relate serum antibody titers to fatal anaphylactic shock in the ovalbumin-sensitized mouse the question of antibody identity arose. Having previously noted(5) that all proteins do not manifest the same ability to sensitize the white mouse to the same degree, the sensitizing capacities and cross-reactivities of the available protein contaminants of crystalline ovalbumin were characterized by the pertussis-technic(6).

Materials and methods. Thrice recrystallized egg albumin (Ea) was prepared according to the procedure of Kekwick and Cannan (7) as described by Kabat and Meyer(8). Conalbumin (Ca), as the crystalline iron complex, and ovomucoid (Ovo) were prepared(9) and generously supplied by Dr. Robert C. Warner of New York University. Crystalline lysozyme (Lyso) was purchased from Nutritional Biochemicals Corp. Female white mice of the Swiss-Webster strain weighing about 20 g were obtained from Tumblebrook Farms. Groups of animals were sensitized by a single intraperitoneal injection of a given amount of the egg white protein contained in 0.5 ml of a suspension of 2 x 10^{10}

* Supported by research grant from N.I.H., U. S. Public Health Service.

TABLE I. Challenging Antigen Administered Intravenously 10 Days after Intraperitoneal Sensitization.

Challenging Antigen	mg	Sensitizing antigen: Ea 1 mg	Ea 5 mg	*H. pertussis*-Ea 1 mg	*H. pertussis*-Ea 5 mg	Ovo .5 mg	Ovo 1 mg	*H. pertussis*-Ovo .5 mg	*H. pertussis*-Ovo 1 mg	Ca, .5 mg	*H. pertussis*-Ca, .5 mg	Lyso, 1 mg	*H. pertussis*-Lyso, 1 mg
Ea	1	1/ 6*		17/21						0/10	3/15		
"	5						0/7		1/10			1/13	5/14
Ovo	.1	0/21		0/19		0/14	0/9	0/10	0/13				
"	.3			0/ 4			0/8	0/ 4	0/12			0/13	0/14
Ca	.1	0/14	0/10	0/13	6/12		0/7		0/10	0/10	11/11	0/13	1/14
Lyso	.1											0/ 1	0/ 4
"	1		0/18		0/18				0/18		0/17	0/15	14/16

* Values expressed as No. of animals dead of anaphylactic shock over No. of animals challenged.

Hemophilus pertussis phase I organisms. Control groups received the same quantity of antigen in saline solution without the bacteria. Ten days after this sensitizing dose the mice of each group were challenged by the intravenous injection of either the homologous antigen or one of the heterologous egg white proteins.

Results. The data in Table I are expressed in terms of ratio of number of animals dead of anaphylactic shock to number of animals challenged. No attempt was made to record severity of the anaphylactic reaction but for this "all-or-none" effect.

It is seen that Ovo is not capable of sensitizing the white mouse by this technic in contradistinction to both Ca and Lyso. It is also to be noted that whereas Ca produces anaphylactic death in the mouse sensitized to Ea, Lyso does not in the amounts used for challenge. On the other hand, Ea elicits shock in mice sensitized to Lyso and Ca. How much of this interrelationship depends on the integral amounts of Ca and Lyso present in Ea is not known for no attempt was made at quantitation by varying the sensitizing and challenging dose. It seems reasonable to assume from these experiments that (1) either there is more Ca than there is Lyso as an impurity in Ea, or (2) Ca is a far stronger antigen than Lyso. At any rate, from the relative amounts of antigen used in the challenge it would seem to indicate that the amount of Ca and Lyso producing shock need be far greater than that present in the Ea used.

These data offer an *in vivo* conformation of the results of Vaughan and Kabat(10) wherein relatively greater amounts of anti-Ca was found in anti-Ea as compared to antibodies to the other trace impurities. It was also indicated(10) that antibodies to impurities were demonstrable even though minimal quantities of antigen were used for immunization. In the present study, anti-Ca was demonstrated in those mice sensitized with 5 mg Ea as a single dose and not in those receiving 1 mg Ea.

The enhancing effect of pertussis is well demonstrated, be it by adjuvant action or by some other mechanism. Antibodies to trace impurities have been demonstrated where very large quantities of purified antigen have been used for immunization(1). Freund adjuvant has been utilized(2) or alum-precipitated antigen has been given(10) to mention several technics. The mechanism of pertussis action has not yet been well categorized.

Summary. Conalbumin and lysozyme are effective antigens in producing sensitivity in pertussis-treated white mice. Conalbumin cross-reacts with mice sensitized to ovalbumin, lysozyme does not. Ovalbumin shocks mice sensitized to both conalbumin and lysozyme, however. Ovomucoid is not antigenic.

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Received March 20, 1957. P.S.E.B.M., 1957, v95.

Anticancer Activity of Purine Antagonists and Their Ribosides. I. Comparative Studies with 6-Mercaptopurine and 6-Mercaptopurine Riboside.* (23144)

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Synthesis of 6-mercapto-9-β-D-ribofuranosylpurine (6-MP-riboside) has been achieved in 70-80% yields by reaction of 6-chloro-9-β-D-ribofuranosylpurine with hydrogen sulfide in methanolic sodium methoxide(1). This "fraudulent" riboside was considered worthy of synthesis and trial against experimental neoplasms in view of the well-established antibacterial(2) and antileukemic(3) activity of 6-mercaptopurine (6-MP). The possibility exists that 6-MP may be converted to 6-MP-riboside or ribotide before it becomes an active antimetabolite, and it has been noted that certain 6-MP-resistant bacteria lack the ability to convert hypoxanthine to purine ribotides. To obtain preliminary information on the potential usefulness of 6-MP-riboside, experiments have been carried out to test: (a) Comparative activity of 6-MP and 6-MP-riboside as inhibitors of growth of Adenocarcinoma 755, an experimental neoplasm of unusual sensitivity to known purine antagonists (4). (b) Sensitivity of *Streptococcus faecalis* (ATCC No. 8043, SF/O) and 6-MP-resistant lines of this bacterium to inhibition by 6-MP-riboside. (c) Effects of 6-MP-riboside on growth of a 6-MP-resistant line of Adenocarcinoma 755.

The results obtained in such studies are reported herein.

Inhibition of Adenocarcinoma 755. Highly inbred C57 black mice obtained from Jackson Memorial Laboratories were implanted with Adenocarcinoma 755 by the usual trocar method, randomized, and broken into groups of 10 mice each. The comparative inhibitory effects of 6-MP and 6-MP-riboside on growth of this tumor were then determined. Both compounds were administered intraperitoneally; therapy was initiated 24 hours after tumor implantation and continued once a day (Schedule B) or 3 times daily (Schedule C) for 11 or 12 days. All tumors were excised and weighed individually on the 12th and 14th day. The results of these inhibition assays are summarized in Table I.

Effects of 6-Mercaptopurine and 6-Mercaptopurine Riboside on Growth of Streptococcus faecalis. To learn something of the cross-resistance in biologic systems between 6-MP and its riboside, experiments were carried out in which *S. faecalis* (SF/O) and two 6-MP-resistant lines of *S. faecalis* (SF/MP(5) and SF/MPcc†) were compared as to their susceptibility to growth inhibition by 6-MP and its riboside. A modification of the medium of Flynn, *et al.*(6) was used in these experi-

* This work was supported by grant from Am. Cancer Soc. and the Cancer Chemotherapy National Service Center.

† This resistant line was isolated by the same procedure as was SF/MP(5).