being the case, search should be made for substitute anti-oxidants which would be free from the comparatively minor, but nevertheless definite, disadvantages of sodium bisulfite.

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Experimental Inoculations of Trichomonads from Man into the Prostate Gland of Rats.

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The purpose of these experiments was to determine the duration of experimental infections with the 3 human trichomonads in the prostate gland of the rat. According to certain recent workers *Trichomonas vaginalis* may occasionally be a causative agent of chronic prostatitis.

Although the incidence of trichomonad infection in the vagina of women is fairly high (10-69.9%),[1] positive reports of *T. vaginalis* in the prostate of men have been rare. Stuhler[2] found 16 positive cases out of a total of 32,000 prostate secretions; Riba and Perry[3] reported 2 cases. Nitschke[4] examined the urine and prostate fluid of 40 men suffering from non-specific urethritis and found 5 of them positive for *Trichomonas vaginalis*. Working in conjunction with Drs. A. M. Meads and T. I. Buckley of Oakland, California, we have been able to demonstrate one positive case of *T. vaginalis* out of a total of 100 patients examined. In all cases the expressed prostatic fluids were cultured in L.E.B. medium and were examined after each 2 to 4 transplants before being discarded as negative. This one positive case was a single man, age about 45 years, having a past history of gonococcal infection 15 years prior to this examination. There was no urethral discharge present, the gland was normal in size and quite tender on massage. Microscopic examination of the expressed prostatic fluid showed approximately 5% pus cells and numerous flagellates.

The combined effect of bacteria and protozoa probably accounts

[1] Bland, P. B., Goldstein, L., and Wenrich, D. H., *J. A. M. A.*, 1931, **96**, 157.
[2] Stuhler, L. G., *Proc. Staff Meeting Mayo Clinic*, 1933, **8**, 221.
[3] Riba, L., and Perry E., *J. Urol.*, 1929, **22**, 563.
[4] Nitschke, P. H., *J. A. M. A.*, 1936, **107**, 12.

TABLE I.

Organism—*Trichomonas vaginalis.*
Total No. of rats used, 15. % positive, 66.66.

Rat No.	Previous Passage thru rat	Source of Material	Results	Hours in Gland
1	None	Culture	+	4
2	"	"	+	4
3	"	"	—	5
4	"	"	+	5
5	"	"	—	5
6	"	"	+	6
7	Once	Rat No. 6	—	6
8	None	Culture	+	24
9	"	"	+	24
10	Once	Rat No. 1	+	25
11	None	Culture	+	30
12	"	"	—	48
13	Twice	Rat No. 10	+	103
14	"	Rat No. 10	+	121
15	None	Culture	—	144

Organism—*Trichomonas buccalis.*
Total No. of rats used, 15. % positive, 46.66.

Rat No.	Previous Passage	Source of Material	Results	Hours in Gland
1	None	Culture	+	24
2	"	"	+	24
3	"	"	+	43
4	Once	Rat No. 2	+	48
5	None	Culture	+	49
6	Once	Rat No. 1	+	121
7	Twice	Rat No. 6	+	144
8	None	Culture	Animal died in	96 hrs.
9	Once	Rat No. 1	" " "	96 "
10	Twice	Rat No. 4	" " "	24 "
11	"	Rat No. 4	" " "	24 "
12	"	Rat No. 4	" " "	24 "
13	"	Rat No. 4	" " "	24 "
14	"	Rat No. 4	" " "	24 "
15	Once	Rat No. 3	" " "	120 "

Organism—*Trichomonas hominis.*
Total No. of rats used, 17. % positive, 64.7.

Rat No.	Previous Passage	Source of Material	Results	Hours in Gland
1	None	Culture	+	4
2	"	"	+	24
3	"	"	+	38
4	Once	Rat No. 2	+	48
5	None	Culture	+	48
6	"	"	+	66
7	"	"	+	72
8	"	"	+	101
9	Once	Rat No. 6	+	102
10	Twice	Rat No. 4	+	118
11	None	Culture	—	121
12	Once	Rat No. 3	+	149
13	"	Rat No. 6	—	168
14	Twice	Rat No. 4	Animal died in	96 hrs.
15	Three	Rat No. 10	" " "	24 "
16	"	Rat No. 10	" " "	24 "
17	"	Rat No. 10	" " "	24 "

for some cases of prostatic trouble. Karnaky[5] inoculated the bacteria accompanying *Trichomonas vaginalis* into the vaginal tract of women and failed to obtain a vaginitis. When the bacteria were mixed with *T. vaginalis* he obtained the usual clinical picture.

In our experimental procedure material was obtained from the vagina of women and cultured in L.E.B. medium. An opening into the abdominal cavity was made by midline incision and a total of 0.5 cc. of this Trichomonas-bacteria culture was injected into 2 lobes of the prostate gland. After varying intervals (shown in Table I), the gland was removed and placed in culture medium to determine the presence or absence of Trichomonas. Comparative studies using Trichomonas-bacteria cultures of *T. hominis* and *T. buccalis* were also made.

Eight of 15 rats were unable to survive inoculation with *T. buccalis* and 4 out of 17 died when cultures of *T. hominis* were used. There were no deaths in 15 rats inoculated with *T. vaginalis*. The maximum survival time of *T. vaginalis* which had not undergone previous animal passage was 30 hours; of *T. buccalis* 49 hours, and of *T. hominis* 101 hours. The maximum survival times of *T. vaginalis, T. buccalis* and *T. hominis* after previous animal passage were 121 hours, 144 hours and 149 hours respectively. The increased time which the organisms are able to remain viable in the gland may be due to an increased degree of pathogenicity of the protozoa, or of the bacteria, or both, since in some cases the glands showed induration; or it may be due to an increase in the adaptability of Trichomonas to the glandular tissue.

Summary. The 3 species of Trichomonas do not show any significant difference in survival time in the prostate gland if they have had previous animal passage. It is interesting to note that without previous passage *T. buccalis* and *T. vaginalis* closely resemble each other in their survival time. This is in accordance with the opinions of several workers who have pointed out the morphological similarities of these two species.

Although it obviously cannot be assumed that conditions in the prostate gland of the rat and of man are identical, these experiments do indicate that trichomonads can survive for some time in this type of tissue. Furthermore, by making cultures of the expressed prostatic fluid the incidence of *T. vaginalis* may prove to be greater than present statistics indicate.

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[5] Personal communication.