

Συμπεράσματα.—1) Τὰ ἐκ χεδροπῶν ἐδέσματα ἐσθιόμενα εἰς δύο φαγητὰ μεσημβρίας καὶ ἐσπέρας δύνανται νὰ καλύψωσιν ἀναλόγως εἶδους καὶ τρόπου παρασκευῆς των ἀπὸ 800 μέχρις 1600 θερμίδας καθ' ἑκάστην ἢ τὸ 1/4 μέχρι καὶ πέραν τοῦ ἡμίσεος τοῦ σιτηρεσίου (κατὰ μέσον ὄρον 3000 θερμίδας ἡμερησίως).

2) Εἰ καὶ τὰ ὄσπρια ἔχουσι μεγάλα ποσὰ ἀζωτούχων οὐσιῶν, δὲν δύνανται ὡς ἐκ τῆς μικρᾶς τούτων βιολογικῆς ἀξίας νὰ χρησιμεύσωσιν ὡς ἀποκλειστικὴ πηγὴ λευκωμάτων, ἰδίως προκειμένου περὶ παιδίων, ἀλλ' ἐνδείκνυται ὅπως συμπληροῦνται διὰ τῶν λευκωμάτων τοῦ ἄρτου ἐκ σίτου, ἐσθιομένου εἰς ποσὸν 600 γραμμ. ἡμερησίως ἢ καὶ περισσότερον. Συγχρόνως δέον νὰ τελεῖται καὶ συμπλήρωσις διὰ τῆς προσθήκης ποσοῦ τινος λευκώματος ζωϊκῆς προελεύσεως καὶ μεγάλης βιολογικῆς ἀξίας, ὡς τοιοῦτον δὲ κατάλληλον ὡς εὔωνον εἶναι τὸ λεύκωμα τοῦ τυροῦ φέτας μετὰ δὲ τοῦτο τὸ δαπανηρότερον τὸ τῶν ὄσων ἰχθύων τεταριχευμένων κλπ.

3) Τὸ εὐπεπτότερον ἐκ τῶν ὄσπριων εἶναι καὶ, τὸ ὀλιγώτερον δαπανηρὸν—οἱ ἐρέβινθοι—, τὸ δὲ δαπανηρότερον—αἱ φακαὶ—εἶναι καὶ τὸ δυσκολώτερον πεπτόμενον καὶ παρουσιάζον τὰς μεγαλειτέρας ἀπωλείας, ὡς ἐκ τῆς ἀτελοῦς πέψεως, ἰδίᾳ τῶν ἀζωτούχων οὐσιῶν. Τοῦτο ὀφείλεται, ὡς ἤδη ἐλέχθη, εἰς τὸ ὅτι τὸ μὲν πρῶτον εἶναι ἐντοπίας παραγωγῆς καὶ ὀλιγώτερον εὐγευστον, ἐνῶ αἱ φακαὶ εἶναι εὐγευστότεραι καὶ εἰσάγονται ἐκ τοῦ ἐξωτερικοῦ κατὰ μέγα μέρος (ἰδὲ κείμενον περὶ τεχνητῆς πέψεως κτλ.).

BIOXHMEIA. — The action of sulfanilamide on the spermatozoa of man in vitro by *Stephane D. Demetriades*. * Ἀνεκοινώθη ὑπὸ τοῦ κ. Γ. Γωακείμογλου.

Observations were made by Jaubert and Motz⁵ of abnormalities in the sperm of individuals who had been subjected to a curative treatment of sulfanilamide. As a result of such treatment the number of spermatozoa was reduced and their motility was less marked.

Taking the foregoing into account, Pallazoli, Nitti, Bovet and Levinson⁵ experimenting on rabbits, conducted investigations and found that the administering of large doses of sulfanilamide does not have a detrimental effect upon spermatogenesis nor on the motility and fertility of spermatozoa.

* ΣΤΕΦΑΝΟΥ Δ. ΔΗΜΗΤΡΙΑΔΟΥ, Ἡ ἐπίδρασις τῆς σουλφανιλαμίδης ἐπὶ τῶν σπερματοζωαρίων τοῦ ἀνθρώπου in vitro.

Levaditi and Vaisman³, having experimental on rabbits and mice, have arrived at similar results.

Further to these investigations, Heckel and Hori¹ experimented on men through the application of large doses of sulfanilamide, and an examination of their sperm at definite intervals, revealed that the action of sulfanilamide on spermatogenesis is under no circumstances injurious.

Other observations were also made by Naoyasu Sato⁴ in the course of investigations on the action in vitro of Prontosil on spermatozoa of rat, taken direct from the epididymis and preserved in a slightly basic solution of NaCl (7‰) under a temperature of 20-25° C. Under these conditions, the spermatozoa retained their motility during a period of 6-8 hours both under the influence or in the absence of sulfanilamide, whereas by the action of other substances such as hydrochloric quinine or KCN, the spermatozoa were killed within a very short period of time.

The purpose of this paper is to set out the experimental results of research on the action in vitro of sulfanilamide (para-aminophenylsulfamide) on spermatozoa of man.

The sperm of individuals of various age (15-28 years) was examined. The ejaculation was effected direct into a Jena glass, 55 mm in diameter and of a capacity of 100 cc. The sperm thus obtained was allocated into test tubes in which it was carefully mixed with the physiological solutions used in the experiment and containing sulfanilamide or otherwise.

The final sulfanilamide concentration of the mixture was, in certain instances, 1:1000 and, in others, 2.5:1000. The test tubes containing the sperm and physiological solution mixture were preserved throughout the period of each experiment in a water bath of 22-24° C. Out of each tube a drop was taken every 30 or 60 minutes and was examined under the microscope on a slide under a cover glass. In addition, examination was made during the same intervals, of drops which, since the beginning of the experiment, were placed in a Van Tieghem cell and were left until conclusion of the investigation in the temperature of the laboratory, i.e. 17-19° C, in one instance and 14-16°C in the other cases.

The solutions used, as aforesaid, were NaCl solution 7 or 9‰ and physiological solution of prof. Ioakimoglou² (NaCl 8 grs., CaCl₂ 0.2 grs., KCl 0.1 grs., Ca(OH)₂ 0.017 grs., distilled water 1000 cc). The reaction of the above solutions was slightly basic, pH=7.4-7.5.

The laboratory equipment, as well the physiological solutions used, were duly sterilized. Each individual sperm was subjected to comparative observation in a NaCl and Ioakimoglou solution.

The results of these investigations disclosed that the motility of the spermatozoa was very high during the first 2-3 hour period and equal to that prevailing at the moment of ejaculation. Subsequently, the motility gradually declined and was still noticeable after lapse of a period of 20-24 hours from excretion. Likewise, the percentage of the moving spermatozoa was gradually reduced. In all the above mentioned cases observation was made of spermatozoa registering slow motion or swaying even 50 hours from ejaculation, irrespective as to whether NaCl or Ioakimoglou solutions were used.

In all the instances investigated the life duration and the degree of motility was in no way affected by the addition of sulfanilamide.

CONCLUSIONS

1. Sulfanilamide in concentration of 1 and 2.5 p. 1000, has no effect whatsoever on the life duration and the motility of spermatozoa of man, preserved in vitro in NaCl 7 or 9 p. 1000 solutions and in a Ioakimoglou physiological solution.

2. The aforesaid physiological solutions appear to be of equal value in the preservation of the spermatozoa and do not affect the action of sulfanilamide.

3. The temperature (ranging between 14 and 25°C), does not appear to influence the motility and life duration of the spermatozoa, nor does it affect the resistance of such spermatozoa to sulfanilamide.

LITERATURE

1. HECKEL (N. J.) and HORI (C. G.), The effect of sulfanilamide upon spermatogenesis in man. *Amer. Journ. of med. Sci.*, V. 198 (1939) p. 347.
2. ΙΩΑΚΕΙΜΟΓΛΟΥ (Γ.), *Φαρμακολογία και Συνταγολογία*, τόμ. 2 Ἀθήναι, 1940, σελ. 198.
3. LEVADITI (C.) et VAISMAN (A.), Derivés benzeniques sulfamidés et spermatogénèse. Étude expérimentale. *C.r. Soc. Biol.* 128 (1938), p. 352.
4. NAOYASU SATO, Okoyama-Igakkai-Zasshi (jap) 52 (1940), 2846 ref. *Chem. Zbl.* 1941, 1986. (In DOMAGK G. und HEGLER C.: *Chemotherapie bakterieller Infektionen*. Leipzig 1942, S. 123.
5. PALLAZOLI (M.), NITTI (F.), BOVET (D.) et LEVINSON (M.), Recherches expérimentales concernant l'action du p-aminophénylsulfamide sur la spermatogénèse du lapin. *C.r. Soc. Biol.* 128 (1938), p. 261.

ΠΕΡΙΛΗΨΙΣ

Ἐν τῇ παρουσίᾳ πειραματικῆ ἔργασίᾳ ἐξετάζεται ἡ ἐπίδρασις τῆς σουλφανιλαμίδης ἐπὶ τῶν σπερματοζωαρίων τοῦ ἀνθρώπου *in vitro*.

Ἐξετάσθησαν ἄτομα διαφόρου ἡλικίας ἀπὸ 15 μέχρι 28 ἐτῶν. Τὸ σπέρμα ἐλήφθη δι' ἀπ' εὐθείας ἐκσπερματώσεως ἐντὸς ὑαλίνου πλατυστόμου δοχείου καὶ ἠραιώθη διὰ διαλυμάτων NaCl 7 ἢ 9 τοῖς 1000 καὶ φυσιολογικοῦ διαλύματος τοῦ Καθηγητοῦ Ἰωακείμογλου — NaCl 8 γρμ., CaCl₂ 0.2 γρμ., KCl 0.1 γρμ., Ca(OH)₂ 0.017 γρμ., ὕδωρ ἀπεσταγμένον 1000 κ.ἐκ.—), περιεχόντων ἢ μὴ σουλφανιλαμίδην. Ἡ ἀντίδρασις τῶν διαλυμάτων τούτων ἦτο ἐλαφρῶς ἀλκαλική, pH = 7.4-7.5. Αἱ χρησιμοποιηθεῖσαι πυκνότητες τῆς ἐν λόγῳ οὐσίας ἦσαν 1 καὶ 2.5 τοῖς 1000. Τὸ ἀραιωθὲν σπέρμα (0.5 κ.ἐκ. σπέρματος + 2.5 κ.ἐκ. διαλύματος) διετηρεῖτο εἰς Θερμοκρασίαν 22-24°C ἢ εἰς τὴν θερμοκρασίαν τοῦ ἐργαστηρίου (17-19°C ἢ 14-16°C), ἐντὸς μικρῶν δοκιμαστικῶν σωλῆνων ἢ ὡς σταγόνες εἰς ὑγροὺς θαλάμους τοῦ Van Tieghem.

ὑπὸ τὰς ἀνωτέρω συνθήκας τὰ σπερματοζωάρια διετηρήθησαν ἐν ζωηρᾷ κινήσει μέχρι 20-24 ὥρων ἀπὸ τῆς ἐξόδου των. Κατόπιν ἡ ταχύτης κινήσεως ἠλαττοῦτο βαθμηδόν, μικρὸν δὲ ποσοστὸν τούτων διετηρεῖτο ἐν ζωῇ καὶ βραδυτάτῃ κινήσει ἐπὶ 50 καὶ πλέον ὥρας ἀπὸ τῆς ἐκσπερματώσεως. Τοῦτο τόσον εἰς τοὺς μάρτυρας, ὅσον καὶ εἰς τὰ μετὰ σουλφανιλαμίδης διαλύματα.

Ἐκ τῶν πειραμάτων τούτων ἐξάγεται τὸ συμπέρασμα ὅτι ἡ σουλφανιλαμίδη εἰς πυκνότητος 1 καὶ 2.5 τοῖς 1000 καὶ ὑπὸ τὰς ἀναφερθείσας συνθήκας θερμοκρασίας (14-24°C), οὐδεμίαν ἐπίδρασιν ἔχει ἐπὶ τῆς ζωτικότητος καὶ κινήσεως τῶν σπερματοζωαρίων τοῦ ἀνθρώπου διατηρουμένων *in vitro*.

Ἡ ἀνθεκτικότης αὕτη τῶν σπερματοζωαρίων εἰς τὴν σουλφανιλαμίδην εἶναι ἡ αὐτὴ καὶ εἰς τὰ τρία χρησιμοποιηθέντα διαλύματα.

ΙΑΤΡΙΚΗ.— Ἐπιδημιολογικὴ μελέτη τῆς ἀνεμοσευλογίας καὶ παρωτίτιδος¹
ὑπὸ Ἀντ. Παπαϊωάννου*. Ἀνεκοινώθη ὑπὸ τοῦ κ. Γ. Ἰωακείμογλου.

Εἰς προηγουμένην ἀνακοίνωσιν τοῦ Γ. Π. Ἀλιβιζάτου καὶ Α. Παπαϊωάννου² ἀνεκοινώθη ὅτι ὁ παιδικὸς πληθυσμὸς ἐν Ἀθήναις μολύνεται καὶ νοσεῖ ἐκ τῶν 4 κυρίων παιδικῶν μιάσεων (ἰλαρᾶς, ὄστρακιᾶς, κοκκύτου καὶ διφθερίτιδος) ἐνωρίτερον ἢ ἐν ἄλλαις χώραις· τοῦτο δὲ κατωρθώθη διὰ τῆς συλλογῆς πληροφοριῶν ἐπὶ εἰδικῶν δελτίων, τὰ ὅποια διενεμήθησαν εἰς τὰς οἰκογενεῖας τῶν φοιτῶντων εἰς διάφορα

¹ Ἐκ τοῦ Ἐργαστηρίου Ὑγιεινῆς τοῦ Πανεπιστημίου Ἀθηνῶν καὶ Ἐπιδημιολογίας τῆς Ὑγειογονικῆς Σχολῆς Ἀθηνῶν καὶ τοῦ Πειραματικοῦ Σχολείου Πανεπιστημίου Ἀθηνῶν.

* ANT. PAPAIOANNOU, *Étude épidémiologique de la varicelle et des oreillons*.

² Ἰδ. Πρακτ. Α. Α., 17 (1942) σ. 130 κέξ.