EUROPEAN MEETING OF MEAT RESEARCH WORKERS

BRNO. CZECHOSLOVAKIA

AUGUST 26th - 31st 1968

SECTION

A 19

Amelia Kossakowska, Stanislaw Kafel, Aleksander Paleolog

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Investigations on the Occurrence of Cl. Perfringens in Meat Carcasses of Sheep Used for "Rabiesvac" Vaccine Production.

Recently a number of the food poisoning cases caused by Cl. perfringens were described (3,4,6); this microorganism is, therefore, reckoned to the group of the so-called "meat poisoners".

Cl. perfringens can often be found in some foods, like raw and smoked meat, milk etc. (1,4). It occurs particularly often in the meat of animals slaughtered of necessity.

In the course of the author's own investigations Cl. perfringens was often found in sausages made, among others, of the meat of sheep used for anitirabietic vaccine "Rabiesvac" production. For that reason the investigations were carried out, aiming at determining Cl. perfringens occurrence frequency in the above meat.

Material and methods.

The material for the investigation in question constituted of meat carcasses of the sheep used for antirabietic vaccin^e production at the Bioveterinary Industry Plan in Puławy. According to the production formula of this vaccine, the animals were subjected to the intracerebral injection with the fixed rabietic virus and then, in about 7-8 days were killed at the peak disease stage, after occurrence of the agony symptoms. After killing animals 2 muscle samples (from shin and forearm) were aseptically taken from each Carcass. The samples were then subjected to the laboratory testing as soon as possible. The samples from each carcass were inoculated into cooked liver medium placed into two test tubes provided with the Durham fermentation tubes. One of the inoculated media was then pasteurized at 80°C for 15 minutes and afterwards both tubes were incubated under anaerobic conditions at 37°C for 24-48 hours. From the tubes showing gas in the fermentation tubes after incubation, the transfers onto the media of Willis and Hebbs and Mc Clung and Toabe (6.8) were made. After incubation for 24-48 hours under anaerobic conditions the colonies developed, surrounded by precipitation zone and ressembling in the microsco-Pic preparations Cl. perfringens, were subjected to the further biochemical tests while determining their decompo-, Sition ability of lactose, saccharose, maltose, glucose and Selatine as well as their ability to produce indol and their growth way on milk.

The strains producing lecitinase and distinguishing themselves with the decomposition ability of lactose, saccharese, glucose, maltose and gelatine, not producing indol and growing very intensively on milk, under production of a characteristic clot, torn by gas bubbles, were recognized as Cl. perfringens.

In such a way the samples originating from 594 carcasses were tested.

Results.

Among 594 carcasses tested, Cl. perfringens was found in 375 cases, i.e. in 60,11 %.

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Discussion of the results.

The meat of the sheep used for the antirabietic vaccine production is given over to consumption as that of inferior VS" lue, or else is used as an addition to other meat for production of some sausage kinds. Such meat constitutes a specific material due to the fact that the animals are slaughtered during agony. Hence it could be supposed that in this case the microorganisms, and among them also Cl. perfringens can easily penetrate into different organs and muscles. The tests carried out on somewhat similar material, i.e. on the pigs used for production of the vaccine against swine fever (CV), showed the presence of Cl. perfringens in 61.4 % of the samples tested (5). It must be stressed that a considerable amount of meat in the market, originated even from healthy animals, is contamined with Cl. perfringens (2,7), although it is free from this microorganism immediately after slaughter. The contamination occurs during meat dissec tion and its subsequent distribution, so it would be a secondary infection. However, it can be concluded that in the material tested we have had to do with the primary infection in consequence of sickness of the animals investigated.

While taking into consideration the possibility of further contamination during the post-slaughter treatment and the subsequent distribution of meat, it can be supposed that the meat of the sheep used for antirabietic vaccine production, at the moment of reaching the consumer, shows a considerable contamination degree with Cl. perfringens. Using such meat for production of sausages could, therefore, lewer their value from the public health point of view.

Conclusions.

- The meat carcasses of the sheep, used for the antirabietic vaccine "Rabiesvac" production, can often show the presence of Cl. perfringens immediately after slaughter.
- 2. The application of meat of the sheep, used for the

"Rabiesvac" production, for making sausages, could lower the value of the latter from the public health point of view.

References.

- Gaugusch Z., Kafel S., Ozdzyńska E., Cader-Strzelecka B., Strzelecki E.: Badania porównawcze nad mikroflora wędlin i wyrobów wędliniarskich Med. Wet. 6, 337 (1965).
- ². Hall H.E.: Examination of Foods for Enteropathogenic and Indicator Bacteria. Public Health Service Publication No. 1142, Washington 1964.
- 3. Hobbs B.C., Smith M.E., Oakley C.L., Warrack H.G., Cruiskshank I.C.: Clostridium Welchii food poise--ning. J. Hyg. 51, 74 (1953).
- ⁴. Kafel S.: Problem Clostridium perfringens w produktach spozywczych, Med. Wet. 2, 84 (1965).
- 5. Kossakowska A.: Badanis nad występowaniem Cl. perfringens w mięsie świń zakażonych sztucznie wirusem pomoru. Med. Wet. 5, 89 (1966).
- ⁶. Mc Clung L.S., Toabe R.: The yolk egg plate reaction for the presumptive diagnosis of Clostridium sporogenes and certain species of the gangrene and botulinum group. J. Bact. 53, 139 (1947).
- 7. Piwowarow J.P.: Opyt izuczenija obsiemiennosti Cl. perfringens produktow pitanija. Gig. i Sanit. 12, 91 (1964).

 Willis A.T.: Butterworth. Anaerobic Bacteriology in Clinical Medicine. London (1960).