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ANABOLIC HORMONE RESIDUES IN LOCAL AND IMPORTED MEAT

Mahmoud, Y.El.A.

Food Hygiene Department, Faculty of Veterinary Medicine,
Tanta University Kafre El Shiekh Branch.

ABSTRACT ρ A total of 100 random samples consists of (50) samples of local meat and (50) samples of imported meat were examined by thin layer chromatography and the results revealed that all the examined samples did not contain any anabolic hormone residues- The public health significance of anabolic hormone residues and the hygienic measures which should be applied on the feeds, drugs and the methods of production of meat producing animals were discussed.

Introduction

Owing to the increasing importance of anabolic hormone residues in meat and its public health significance the present study was planned to detect anabolic hormone residues in imported and local meat.

FAO/ WHO (1979) stated that anabolic agents such as diethylstilbestrol, dienestrol diacetate, estradiol benzoate, melengestrol acetate, progesteron, chlormadinone actate and zearalenone given to food producing animals in high doses for susceptible species and/or individuals may produced carcinogenic effects as well as hormonal imbalance. Some of the anabolic agents may be resistant to cooking temperature- The use of anabolic agents in the animal feed is forbidden in the majority of countries, in others a prescribed with-drawal period before slaughter must be observed. Moreover, there are no internationally accepted limits in this respect. So the presence of anabolic agents in meat lead to condemnation of this meat. ***Tsujioka et. al. (1992)*** observed that the residues of progesteron and estorgen in the muscle and fat of steers treated with synovex-s were within the normal physiological range and lower than those of cows. ***Wojton (1993)*** found that the samples taken from muscle and liver of cattle, horses and pigs were free from anabolic residues at time beween 1990-1993. ***Vanoosthuyze et.al. (1994)*** revealed that although the illegal use of orally adminesterated compounds of anabolic hormone in fattening cattle has popularity, the sites of injection are still frequently found during control experiments on the carcases in the slaughtered houses. Also they concluded that analysis of injection sites yielded good survay of the hormones that

were illegally injected. ***Fahmy (1998)*** examined samples of local and imported meat and chicken by radioimmuno assay and thin layer chromatography and failed to detect any of anabolic hormone residues in the examined samples.

Material and methods

Collection of samples :-

A total of 100 samples of fresh and imported frozen meat (50 of each) were collected from local markets and abattoirs in kalyobia, Menofia, Cairo, and Sharkia Governorates. The collected samples (500 grams in weight per sample) were trans-ferred in sterile polyethylene bags to the laboratory as quickly as possible where they were examined for anabolic hormone residues.

Extraction procedure:

The method applied for hormone extraction was recommended primarily by **Umberger et al.(1963)** by thoroughly homogenization of 500gram of ground meat with equal weight of siliceous earth then thoroughly homogenized with 1.5 liter of absolute ethyl alcohol. The supernatant fluid of this mixture was then filtered and combined with 50ml of 2N hydrochloric acid, then mixture was boiled on hot plate till the residual volume become 100-150 ml (this step required about 50 minutes). For recovery of only free hormone, the concentrated mixture was then washed into 500 ml separator funnel with 70 ml of chloroform after brief shaking, 300 ml of water was added carefully and the separated chloroform layer was removed to another separator funnel containing 100 ml water. Extraction and washing steps were repeated twice with 50 ml portions of chloroform, and the chloroform layer were then treated by the system sodium carbonate-sodium hydroxide (Na_2 Co_3-NaOH). The extraction treated with chloroform was then washed again with 30 ml sodium carbonate 10% by careful successive shaking with distilled water. The same step was repeated again twice using 30 ml of sodium hydroxide 1%. The combined sodium hydroxide layers, which contian impure phenols, were acidified with 2N HCL (Hydrochloric acid) and extracted three times with chloroform 30 ml portion each. The treatment with chloroform was repeated till the alkaline phenolates solution became practically free from the yellow colour. The final chloroform mixture was then washed and filtered through saturated cotton with chloroform into suitable beaker. Finally, the extracts occasionally were centrifuged to break the refractory emulsion. The residue after evaporation of solvent from the final chloroform extract was dissolved in 2.5 ml ethyl alcohol.

Analytical procedure:

The collected samples were examined by Thin Layer Chromatography (T.LC.) according to ***Wortberg and Woller (1978) :*** aliquate of the samples were spotted using 20:50 ul with microlitre pepitte on TLC (Thin Layer

Chromatography) plates on a starting line 2 cm from the edge. The plate was dried with hair drier and then plast in developing tanks contains chlorophorm – ethanol (95 : 5) was used as the solvent. To separate all four azodyes (estriol, estron, estradiol and zeranol). The plates were allowed to develop to within one cm of the top, removed and dried with a hair drier, after which they were sprayed with chromogenic reagent. They were dried and exposed to U.V. light for approximately 60 min.

Results and Discussion

The present results revealed that all the examined samples of local and imported meat were free from any anabolic hormone residues. These results were agree with that reported by ***El-Bauomy et.al. (1992)*** who examined 1600 frozen meat samples and 400 frozen fat samples by thin layer chromatography and high performance Liquid chromatography and failed to detect any anabolic hormone residues. ***Tsujioka et.al. (1992)*** examined muscle and fat samples of 19 steer and 24 cows and failed to detect any anabolic hormone residues. ***Kluga et.al (1993)*** examined samples of tissues and biological fluid from cattle up to 2 years during slaughtering and failed to detect anabolic hormone residues. While these results disagree with that reported by ***Pottie (1972)*** who examined (102) samples of calves and found diethylstilbestrol in one of these calves as 2ug/kg ***Brunn et. al. (1982)*** examined 102 meat samples of calves by radioimmuno assay and revealed that 14 specimens were positive. ***Johnsson and Nordlander (1996)*** reported that in routine analysis of 36000 samples from living animals and fresh meat taken from abattoirs in Sweeden and revealed that only 8 samples were positive for anabolic hormone residues.

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