SHORT REPORTS

What's in a burger?

N J Carr, L G Machin

Abstract

In an attempt to confirm the presence or absence of central nervous tissue in commercially prepared beefburgers, four burgers were processed and stained using routine histological laboratory techniques. Constituent parts of the burgers could be identified readily. In this small sample no central nervous tissue was found. There is currently considerable general interest in the contents of foodstuffs, particularly now that certain specified bovine offals as well as central nervous tissue have been banned from human consumption. Conventional histological techniques may be of value in analysing the ingredients of beef products.

Recently Boon reported that haematoxylin and eosin and immunohistochemical stains of beef sausages failed to show any evidence of central nervous tissue.¹ We, too, were concerned at the possible incorporation of the transmissible agent of bovine spongiform encephalopathy into the human food chain, and earlier this year we examined several commercially prepared beef burgers by routine formalin fixation and paraffin wax embedding.

Four burgers were studied: two were well known supermarket "own brands", one was "home made" by a butcher, and one was obtained from a hospital staff canteen. Three blocks of tissue were taken in each case, except for the canteen burger from which only one block was available. At least two stained sections from each block were examined.

In each case skeletal muscle was the predominant component with variable proportions of fat, fibrous tissue, and vegetable matter. The two supermarket burgers included small quantities of glandular tissue compatible with salivary gland, and one of them also included a few pieces of cartilage and smooth muscle. No evidence of central nervous tissue was found, although occasional peripheral nerves were identified within fibrous tissue.

In one of the supermarket burgers, we also observed amorphous material (figure) which was amphophilic on haematoxylin and eosin staining and did not stain with the periodic acid Schiff (PAS) method. We assumed this to be some sort of filler/binder; egg albumin is included in the list of ingredients in this brand but this substance, although PAS negative, is eosinophilic rather than amphophilic. The canteen burger contained similar material.

Section of beef burger to show amorphous material (haematoxylin and eosin).

Dr Boon's use of an immunoperoxidase stain for glial fibrillary acidic protein (GFAP) is ingenious. The preserving, curing, and emulsifying processes which may be used in the production of sausages, however, may result in various chemical changes,^{2,3} and it would be interesting to learn if GFAP really would persist in immunoreactive form in processed meat. If the technique could be validated it might prove a means of policing the government regulations banning the use of central nervous tissue in foodstuffs.

Department of
Histopathology, RAF
Institute of Pathology
and Tropical
Medicine, Halton,
Aylesbury,
Buckinghamshire
HP22 5PG
N J Carr

Department of
Histopathology, Royal
Marsden Hospital,
Sutton, Surrey
L G Machin

Correspondence to:
Dr N J Carr

Accepted for publication
16 August 1990

1 Boon AP. Histomorphometry and immunohistochemistry of beef sausages. *J Clin Pathol* 1990;43:435.

2 Gracey JF. *Thornton's meat hygiene*. 7th ed. London: Ballière Tindall, 1981:204-30.

3 Russel AD, Hugo WB, Ayliffe GAJ. *Principles and practice of disinfection, preservation and sterilisation*. Oxford: Basil Blackwell, 1982:307-42.