

## BOUILLON CUBES AS A SUBSTITUTE FOR BEEF EXTRACT OR MEAT IN NUTRIENT MEDIA

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During the war the high price of meat and the frequent scarcity of meat extract seriously hampered the preparation of ordinary nutrient media in large quantities, and ordinary bouillon cubes were therefore tested out as a possible substitute. As these cubes contain, besides beef extract, certain vegetable extracts, their use in media for some organisms might be of doubtful value, while for others the growth would be more or less favored. It was to determine this point that the following experiments were carried out. Bovim and Steero bouillon cubes were used in all the tests. Comparisons were made of cultures grown in similar broths made from each kind of cube.

Two lots of 500 cc. each of broth were prepared using Bovim and Steero cubes respectively in the proportions of one cube to 250, 500, 750, 1000 and 1500 cc. of water.

The cubes were dissolved in boiling tap water, the peptone added and dissolved; then the liquid was cooled to coagulate the fats present, and filtered cold, after which it was tubed and sterilized at 15 pounds in the autoclave.

Subsequent to sterilization two tubes of each dilution both with and without peptone were inoculated with the following organisms, *B. typhosus*, *B. prodigiosus*, *B. subtilis*, *B. coli* and *B. botulinus*. Results proved entirely satisfactory.

Since these experiment were concluded (nearly a year) the use of bouillon cubes as a substitute for meat extract in ordinary media has been general and has given entire satisfaction to all our laboratory staff. As a substitute for meat it is as satis-

factory if not more so, than the ordinary meat extracts. Our laboratory stock cultures, pathogens and all, with but few exceptions, are at present growing very well indeed on this bouillon cube medium. One or one and a half cubes (about 3 or 5 grams) are used per liter at a much decreased cost, with an increased ease in preparation, and the titer of the medium does not have to be changed unless so desired.

From our experiments and practical experience, it is quite evident that the use of ordinary bouillon cubes can be recommended in general laboratory work where ordinary beef extract or meat media has been formerly used. Their use is also suggested in the preparation of various special media.