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The Adaptation and Modification of Rhizobium leguminosarum to Certain Adverse Conditions

L. A. Burkey
Iowa State College

A solid medium on which yeasts grow vigorously.

Malt extract (Difco)	15 g.
K_2HPO_4	3 g.
NH_4Cl	1 g.
Agar	20 g.

(Amount of agar to be used, optional)

Medium adjusted with citric acid to pH 5.4-5.6.

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THE DIGESTION OF PECTIN AND METHYLATED GLUCOSES BY VARIOUS ORGANISMS

HAROLD W. COLES

3-monomethyl glucose (I), 1, 2, 3, 5-tetramethyl glucose (II), and 1, 2, 3, 5, 6-pentamethyl glucose (III) were prepared, and, together with pectin, tried out on 185 cultures including organisms isolated from the activated sludge of creamery wastes and members of the colon-typhoid group. A peptone medium was used and a synthetic medium containing no peptone and hence no carbon other than the carbon of the pectin or carbohydrates. The organisms digesting pectin and (I) with the production of acid and gas were those commonly associated with the soil. (II) and (III) were not digested by any of the organisms tried. Conclusions based upon these results were discussed.

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THE ADAPTATION AND MODIFICATION OF *RHIZOBIUM LEGUMINOSARUM* TO CERTAIN ADVERSE CONDITIONS

L. A. BURKEY

A study was made of the effects of desiccation and alkalinity on the growth of the alfalfa root nodule bacteria. A similar study was reported, on the effects of gentian violet, in a previous paper (Burke & Burkey, Soil Science, 1925). In this paper it was shown that continued exposure of the organisms to the dye resulted in more resistance, which was only temporary. Later work has shown the formation of bacteroid forms when the alfalfa organism is grown on dye agar or on medium which is very acid or extremely alkaline.

The development of acid tolerance could not be clearly demonstrated. However, definite alkali tolerance was developed when the alfalfa organism was grown on alkaline medium. This tolerance remained constant for several months (as long as the culture was tested) indicating a permanent change in the organism. The original culture produced good nodule formation on alfalfa rootlets. After the development of alkali tolerance the culture showed an increased activity in nodule formation.

When the alfalfa organism was exposed to desiccated conditions very little change was observed in its morphology. However, culturally the organism gave a clear vigorous growth on mannitol medium and quite a vigorous growth on litmus milk and on potato medium. It particularly showed variance from the original culture in its resistance to dry conditions and in a much larger production of gum. The change produced in this modification is permanent. This dry resistant culture is able to tolerate gentian violet and alkali conditions even better than the resistant cultures. However, the culture now is less effective in nodule formation than before exposure to desiccated conditions.

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RELATIVE COSTS OF HOME MADE AND DEHYDRATED NUTRIENT AGAR

MAX LEVINE

Batches of 1, 4, and 7 liters of nutrient agar were prepared from the ingredients according to Standard Methods, and the costs compared with those of similar batches made from commercial dehydrated nutrient agar. The costs of ingredients, labor, and loss due to filtration, were the only items considered.

It was found uneconomical to prepare nutrient agar from its constituents in batches of less than 2.5 liters, with labor at 40c an hour (about $80.00 per month). The higher the cost of labor, the larger the batch of agar that would have to be made to have costs compare favorably with the use of commercially dehydrated nutrient agar.

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