EXPERIMENTAL PARASITOLOGY 37, 60–66 (1975)

# *Trypanosoma cruzi*: Fatty Acid Metabolism *in Vitro*[1]

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(Submitted for publication August 20, 1973)

WOOD, DUELL E. 1975. *Trypanosoma cruzi:* Fatty acid metabolism *in vitro*. *Experimental Parasitology* 37, 60–66. *Trypanosoma cruzi* populations, composed primarily of trypomastigote forms, readily converted palmitic acid, linoleic acid, oleic acid, and stearic acid to $CO_2$. Appreciable amounts of carbon from these four fatty acids were also incorporated into neutral and phospholipid lipids by these parasites. Palmitic acid, a 16 carbon saturated fatty acid, was converted at rates greater than those of the other three fatty acids.

INDEX DESCRIPTORS: *Trypanosoma cruzi;* Metabolism; Fatty acids; Trypomastigotes; Palmitic acid; Linoleic acid; Oleic acid; Stearic acid; Carbon dioxide; Carbon isotopes.

## INTRODUCTION

In comprehensive reviews of the studies on the metabolism of parasites von Brand (1966) and Honigberg (1967) point out that carbohydrates have been found to be the most important source of energy for the culture forms of the hemoflagellates. Additionally, Ryley (1959) reported that the bloodstream forms (trypomastigotes) of many species of trypanosomes utilized glucose when it was added to media in which these parasites were incubated. In his studies, the glucose consumption of *Trypanosoma cruzi* isolated from the blood of infected mice was almost twice that of culture forms (epimastigotes) harvested from a diphasic medium.

A review of the literature indicates that fatty acids have a minor, if any, role in the energy metabolism of the hemoflagellates. Until recently, the only reported utilization of fatty acids in the energy processes of trypanosomes was in the studies of Manozzi-Torini (1940). In these studies, Manozzi-Torini reported that slight increases, measured manometrically, in respiration rates of culture forms of *T. evansi* occurred when short chain fatty acids were added to the incubation medium.

In recent years, fatty acid metabolism has been found to be an important component of the total metabolism of certain microorganisms and vertebrates tissues (Neptune *et al.* 1964; Meyer and Holz 1966). Indeed, the finding that fatty acids are of importance in the energy metabolism of various tissues has often necessitated the revision of earlier concepts. Much of this new knowledge can be attributed to improvements in the techniques used to study the metabolic processes. Especially useful has been the development of radioisotopic techniques to trace the fate of fatty

[1] The opinions or assertions contained herein are those of the author and are not to be construed as reflecting the views of the Navy Department or the Naval Service at large.