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RESEARCH PAPER

Title: ADULT LACTOSE TOLERANCE IS NOT AN ADVANTAGEOUS EVOLUTIONARY TRAIT

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INTRODUCTION.- Some adult humans, unlike the remaining adult mammals, have the possibility to feed on milk (lactose tolerance, LT) based on lactase persistence (LP) in enterocytes. This condition has been observed mainly among populations originating in northwestern Europe, and in some ethnic groups around the Mediterranean and Near East, in Africa, and on the Indian subcontinent that have a long tradition of dairing, some 6000-9000 years.
As the ancestral state was that of non-LP, adult LT is considered an advantageous evolutionary trait, that is genetically determined by mutation and that has been brought about through centuries of natural selection; this allows carriers to have milk as a nutritional resource in times of shortage, as a source of water in desert environments, and even as a source of calcium. In the absence of genetic challenge, as has been the case for the majority of the world's populations, no evolution occurred.

OBJECTIVE.- To prove the inadecuacy of the evolutionary hypothesis.

RESULTS.- To attain a genetic frequency of LT higher than 90%, as seen in some populations, a high mutation rate and a very high coefficient of selection are needed to displace non-carriers in as few as 200-300 generations. No differences, however, in viability and fecundity rates, the bases for natural selection, have been observed between lactose-tolerant and lactose-intolerant individuals. Moreover, fitness (the contribution of offspring to the next generation) is greater, by far, in lactose-intolerant populations; furthermore, demographic figures show, curiously, that the highest LT rates has been, generally, paralleled by the lowest demographic values, and vice versa.

CONCLUSIONS.- A founder effect, without the cooperation of natural selection, could be a more suitable explanation to justify LT high rates in some populations.