ment (*1*, p. 13, sample No. 421) for the Tepexpan roots, 4,118 ± 300 years, indicates the date for the younger marl above the caliche, not for the bone-bearing layer itself. In other words, paleontologists and prehistorians need not infer from this radiocarbon date that mammoth and horse existed that late in the basin of Mexico; on the contrary, the absence of such fossil remains in formations of Recent geologic age in that area clearly indicates their extinction long before that time.

Considering further that bone and stone artifacts have been found by me and others in the Becerra formation near Tequixquiac, on the northwestern margin of the basin of Mexico (*2*, pp. 46–49), human antiquity can in the light of these new radiocarbon dates be accepted as proved. In this respect, the age measurement of 6,390 ± 300 years for charcoal taken from a preceramic culture-level at Tlatilco affords a significant glimpse into Mexican prehistory, for it establishes an age of early human occupation that antedates the first appearance of organized farming societies of the Archaic civilization by about 3,000 years.

In all these studies much valuable cooperation was given me by my Mexican colleagues, notably Daniel F. R. de la Borbolla, Alfonso Caso, Engineer Arellano, and Arturo Romano. A monograph on the basin of Mexico, as well as a travel book of mine, will soon be published.

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## Lipase from Molds Grown on Oil Seeds

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Camus (*1*), Garnier (*2*), and Wehmer (*3*) detected the presence of the enzyme lipase in molds like *Penicillium* and *Aspergillus* species. Ramakrishnan and Banerjee (*4*) found that the enzyme lipase obtained from the molds grown on oil seeds has a better activity than that obtained from the oil seeds.

In India, which stands second in the production of oil seeds, owing to improper storage and transport, millions of tons of oil seeds are spoiled every year because of mold growth. The authors have therefore undertaken a detailed study to analyze the different molds grown on different oil seeds, prepare the pure strains of the lipolytic molds from them, grow them in a synthetic medium, extract the lipase, and study its activity on various oils and fats.

In general the optimum pH for the lipases obtained from molds is 6.2. Disodium phosphate-citric acid is the best buffer, and ground-nut oil the best substrate.

Our preliminary survey has indicated that a cake medium is the best and cheapest for the production of lipolytic molds on a large scale. Work is under way to collect the strains of all the lipolytic molds, construct a pilot plant to grow them on a large scale, and extract lipase from them in a pure form.

Details of the results will be published elsewhere.

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## *In Vivo* Transformation of D,l-3-Hydroxykynurenine in Xanthurenic Acid

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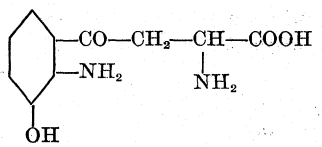
Musajo, Spada, and Casini (*1*) have recently accomplished the synthesis of D,l-3-hydroxykynurenine (small, citron-yellow crystals, mp 213° C, with decomposition):




This synthesis differs slightly from what appeared in a paper by Butenandt, Weidel, and Schlossberger (*2*) published shortly before the work of Musajo and collaborators; the German authors also mention the isolation of l-3-hydroxykynurenine from the fractionation of fresh chrysalids of *Calliphora erythrocefala.*

Musajo, Spada, and Casini have also shown (*1*) how 3-hydroxykynurenine can be transformed *in vitro* by heating with barium hydroxid in xanthurenic acid (4,8-dihydroxyquinoline-2-carboxylic acid) (*3*) and in 3-hydroxy-2-amino-acetophenone. From this transformation of 3-hydroxykynurenine we obtained about 30% by weight of xanthurenic acid.

Musajo and Chiancone determined in 1936 (*4*) that xanthurenic acid is formed *in vivo* from tryptophan through kynurenine. Later, in 1942, in the United States, Lepkovsky and Nielsen (*5*) brought to light the influence of vitamin $B_6$ on its formation.

Proceeding with our research on the genesis of xanthurenic acid, we treated rats with D,l-3-hydroxykynurenine and determined the xanthurenic acid eliminated with the urine. Parallel comparison experiments were also carried out with D,l-kynurenine. The animals were first held on a synthetic diet of casein, starch, fats, salts, and vitamins, and later gelatin was substituted for casein. From the urine of these animals, where xanthurenic acid was absent, after treating them