

vitaminised oil prepared with arachis oil was mixed with hydroquinine (0.2 per cent.)⁵ and the oil aerated. The figures in Table I tend to indicate that though there is a slight fall of potency (10 per cent.) during the first period of 120 hours, the vitamin A value was found to remain practically constant when aeration is continued for the next 300 hours.

TABLE I
Stability of vitaminised arachis oil incorporated with 0.2% hydroquinone

Air passed for hours	Blue value	Peroxide value
0	10	0.8
60	9.4	1.0
120	9.0	1.15
180	9.0	1.5
300	8.95	1.55

Work is also in progress to show how far the oxidative changes, i.e., the formations of peroxides, aldehydes and free acids in various oils are responsible for the destruction of vitamin A in such type of oleum vitaminatum B.P. and whether the destruction of vitamin A is solely dependent on the formation of peroxides in the fats.⁶

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¹ Whipple, *Oil and Soap*, 1936, 13, 231.
² Lowen *et al.*, *Ind. Eng. Chem.*, 1937, 29, 151.
³ Coward *et al.*, *Biochem. Jour.*, 1931, 25, 1102.
—, *Ibid.*, 1932, 26, 1593.
⁴ Nakamura, *Jour. Soc. Chem. Ind. Japan*, 1937, 40, 206 B.
⁵ Basu and Mazumdar, *Leprosy in India*, 1939, 2, 54.
⁶ Jones and Christiansen, *Jour. Amer. Pharm. Assoc.*, 1935, 24, 465.
⁶ Smith, *Biochem. Jour.*, 1939, 33, 201.

CATALASE ACTIVITY IN
MANGIFERA INDICA

THE natural drift of such enzymes as catalase, oxidase and peroxidase in the life of the fruit from fruit-setting to ripening in case of *Mangifera indica* clearly showed a close correlation with the distinct metabolic phases of the fruit.¹ The catalase activity was shown in distinct well-marked phases, viz., (1) an early phase of very low activity, (2) a phase of rapid and steady increase, (3) a period of higher level activity with (4) steep rise to maximum activity, and (5) rapid decline to a minimum.

It will be seen from the table that the maximum catalase and peroxidase activities, corresponded with the mature stage of the fruit and the consequent climacteric and the higher respiratory efficiency of the fruit.

A positive correlation of the catalase and peroxidase activity of the fruit with hæmin Fe content of the tissue at that stage, can also be observed from the table.

TABLE I

Age in days from fruit-setting	Average fresh weight in gm.	Catalase mg. O ₂ /per gm. pulp	Peroxidase mg. glucose oxidised per gm. pulp	Hæmin Fe mg. per gm. pulp	Vitamin C mg. per gm. pulp
13	1	0.12	0.07	.016	..
42	5	0.15	0.08	.021	2.6
57	15	0.20	0.11	.036	..
72	60	0.88	0.12	.125	..
82	65	2.00	0.20	.149	1.7
84	99	3.75	0.25
99*	150	4.2	0.30	.158	..
106	150	13.5	0.35	.151	0.86
112	..	52.0	0.65
114	150	64.7	0.80	.272	..
115	..	78.4	0.85	.278	..

* At this stage ripening begins.

The enhanced catalase activity under artificial doses of ethylene^{2,3} as compared to cold storage and storage under room conditions is recorded in Table II.

TABLE II
Showing catalase activity (mgO₂/gm. pulp) in storage and ethylene treatment on mature fruits of 99 days age

Days in storage	Cold storage 8°-12° C.	Ethylene treatment 28°-32° C.	Room condition 28°-32° C.
Initial conc.	4.1	4.1	4.1
7	4.9	15.0	8.25
14	4.8	16.2	9.50
21	4.9	11.8	9.50

Further studies are being carried out on cystin, cystein, glutathione and ascorbic acid drift in relation to flowering and alternate bearing in mangoes. Detailed results will be published elsewhere.

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Calcutta,
February 24, 1941.

¹ Kar, B. K., and Banerjee, H. K., *Nature*, 1939, 144, 597.

² Bagster, L. S., *Chem. Abs.*, 1940, 34, 4174.

³ Kar, B. K., and Banerjee, H. K., *Curr. Sci.*, 1940, 9, 321.

THE OCCURRENCE OF *DARLUCA* *FILUM* (BIV.) CAST. ON CEREAL RUSTS IN SOUTH INDIA

A NUMBER of fungi are known to parasitize the uredo sori of several rusts. Of these *Darluca filum* has been observed in several parts of the world and on different genera of rusts. Saccardo¹ has mentioned that it occurs in different parts of Europe, America, Ceylon and Africa. Solunskaya² has observed *D. filum* in the Ukraine parasitizing *Uromyces betæ* but it occurs too late in the development of the disease to cause any appreciable reduction of rust. Van

Poeteren³ noticed that the virulence of willow-rust (*Melanopsora* sp.) in Holland was considerably reduced by this fungus. Nicolas⁴ mentions that the uredo sori of *Puccinia glumarum* are affected by this fungus in France. Canonaco⁵ has reported the occurrence of the fungus on the uredo sori of Uredineæ of various Gramineæ in Eritrea. Fedorintchik⁶ has made a detailed study of the fungus in the U.S.S.R. and states that it is parasitic only on the rusts, feeding on the spores and intercellular mycelium and not on the host. He has described a method of utilising the fungus for the control of rust. Artificial infections were successful on *Puccinia dispersa*, *P. simplex*, *P. graminis* and *P. coronifera*. It has also been noted on *Puccinia asparagi* in England.⁷ From India the only record is by Butler⁸ on uredinea of *Puccinia polygonia amphibii* on *Polygonum* sp. from Mussoorie.

During the last few years when specimens of *Sorghum vulgare*, *Pennisetum typhoides* and *Setaria italica* affected by *Puccinia purpurea*, *P. penniseti* and *Uromyces setaria-italicæ* respectively were collected for teaching purposes in the months of November-January, it was found that in many instances the uredo sori were parasitized by *Darluca filum*. Dark brown or almost black pycnidia were observed in large numbers protruding out from below the ruptured epidermis giving a black colour to the sori. In such sori the uredo spores were few and shrivelled.

The pycnidia are dark brown, ostiolate, nearly round or oval with a small neck in some cases. They measure on an average 81.3 × 96.5 μ (Figs. 1 and 2). The spores are hyaline, two

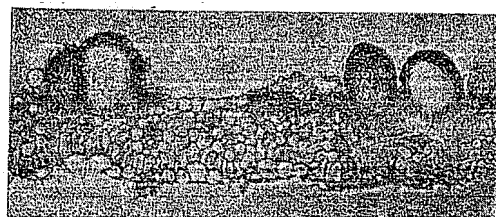


FIG. 1
Section of leaf of *Setaria italica* with *D. filum* on
Uromyces setaria italica (× 200)