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1. Chona, B. L. and Munjal, R. L., *Indian Phytopath.*, 1956, 9, 98.
2. Ramachar, P. and Bhagyanarayana, G., *Curr. Sci.*, 1930, 49, 151.
3. Rao, P. N. and Salam, M. A., *Sci. Cult.*, 1959, 25, 574.
4. Salam, M. A. and Rao, P. N., *Indian Phytopathol.*, 1958, 11, 126.
5. Sydow, H., Sydow, P. and Butler, E. J., *Ann. Mycol.*, 1906, 14, 190.
6. Venkatarayan, S., *Curr. Sci.*, 1946, 15, 319.

#### OCCURRENCE OF PEACH YELLOWS IN INDIA

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YELLOWS disease of peach is one of the oldest diseases known in the history of plant virus diseases. The disease was recorded as early as 1791 in Philadelphia<sup>1</sup> and its first report was published in 1888<sup>2</sup>. The disease is of great economic importance as it appeared in an epidemic form for six times between 1791 to 1888 in various parts of America. In 1974, 3 peach trees in the vicinity of IARI Regional Station, Kalimpong, were observed with symptoms of peach yellows as described by Hartzell<sup>3</sup>. The incidence of the disease varied in different orchards from 5 to 30%. The results of transmission studies are reported in this note.

The scions collected from naturally affected trees were wedge-grafted on 5 seedlings of a local variety on peach var. Holton, in 1975. The first symptoms of the disease appeared in three seedlings and four Holton peach in autumn of 1976 as premature unfolding of the leaf buds on one or two branches. Numerous upright growing shoots bearing small slightly chlorotic leaves developed on infected branches, thus giving a 'Witches broom' appearance (Fig. 1). The small yellowish leaves were dotted with red spots and continue to grow after the fall of normal leaves. Twigs developed from the affected branches have a tendency to grow vertically. The larger leaves of affected plants were mottled. Similar symptoms were also seen on peach seedlings which were graft-inocu-

lated with the diseased material from glasshouse-grown plants and also by the dodder, *Cuscuta reflexa*.

It was observed that the flower and leaf buds in the naturally affected trees as well as glasshouse-inoculated plants develop earlier than in healthy trees. The fruits on the affected branches of outside trees or on infected plants in the glasshouse were larger but of inferior quality with a bitter taste and ripen earlier than those on healthy trees. The affected branches died within 2-3 years following infection.

In 1977-78 some plants of different peach varieties were brought from Simla (H.P.) to study the host range of peach X disease recently reported from this region<sup>4</sup>. It was observed that one plant of each variety J. H. Hale and July Alberta among this lot carried yellows infection suggesting that this disease may be present in Himachal Pradesh also. A disease with similar symptoms was recorded on *Prunus puddum* in Simla at Plant Introduction Station and designated as paja rosettee<sup>5</sup> which appears to be peach yellows. Hence the growers must be cautious while using *P. puddum* as a root stock in Simla Hills.

The symptoms of the disease on peach as described above closely resemble those of peach yellows described by Hartzell and of little peach reported by Cation<sup>6</sup>. The disease, in question, differs from little peach as fruits on little peach affected trees are smaller and ripen late. Further, the typical foliage and 'Witches broom' symptoms developed on inoculated



FIG. 1

plants suggest that the disease is peach yellows which is a new record to India.

Further investigations on the etiology of pathogen and its natural spread in this region are in progress. This also is apparently the first occurrence of this disease outside U.S.A. and Canada. However, its origin in India needs to be ascertained.

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1. Ahlawat, Y. S. and Chenulu, V. V., *Indian J. Hortic.*, 1979, 36, 321.
2. Cation, D., *Agric. Exp. Sta. Mich. State Coll. Circ. Bull. No. 146*, 1932.
3. Dhingra, K. L. and Ahlawat, Y. S., *Indian J. Hortic.*, 1979, 36, 198.
4. Hartzell, A., *Contribs. Boyce Thompson Inst.*, 1935, 7, 183.
5. Peters, R., *Phil. Soc. Prom. Hort. Mem.*, 1808, 1, 15.
6. Smith, E. F., *U.S. Dept. Agric. Bot. Univ. Bull.*, 1888, 9, 1.

## DIOSGENIN AND PHYTOSTEROLS FROM *LYCIUM BARBARIUM* LINN.

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DIOSGENIN,  $\beta$ -sitosterol and lanosterol have been isolated from the flowers of *L. barbarum* for the first time and identified by TLC, mp, and IR spectral studies.

Diosgenin, a major raw material for commercial steroid production, occurs in quite a few species of family Solanaceae<sup>1-8</sup> but so far there is no report on the isolation of diosgenin and phytosterols from *L. barbarum* (fam. Solanaceae) growing in arid zone of Rajasthan although sterol compositions<sup>9</sup>, amino acids<sup>10</sup>, and seed oils<sup>11</sup> have been reported from *L. chinese*. This prompted the present investigation on the production of diosgenin,  $\beta$ -sitosterol and lanosterol in *L. barbarum* species.

Flowers of *L. barbarum* were collected from Devi Kund Sagar, Bikaner, dried and the powdered sample was refluxed with 30% HCl for 4 hr and filtered. The hydrolysed tissue sample was washed with cold distilled water, dried and extracted<sup>12</sup> with benzene for 24 hr. The extract was concentrated *in vacuo* and finally taken up in chloroform.

The chloroform extract along with reference compounds was applied on activated silica gel G plates,

developed and sprayed<sup>13</sup> to detect the steroidal compounds. UV light was used to mark various steroidal compounds on unsprayed plates. The marked bands along with silica gel were collected, reconstituted in chloroform, dried under reduced pressure, crystallized and weighed separately.

Each of the isolated crystallized compounds was subjected to m.p. and I.R. (Perkin Elmer 337 Grating Infrared Spectrophotometer) spectral studies along with standard reference diosgenin,  $\beta$ -sitosterol and lanosterol.

Diosgenin (Rf. 0.43, brown),  $\beta$ -sitosterol (Rf. 0.49, purple) and lanosterol (Rf. 0.59, light brown) were confirmed by their m.p. (201-203°, 139-140° and 141-142°) and superimposable I.R. spectra of the isolated and the authentic samples of diosgenin,  $\beta$ -sitosterol and lanosterol.

Amount of diosgenin,  $\beta$ -sitosterol and lanosterol in the flowers of *L. barbarum* was 0.73%, 1.02% and 0.82% respectively.

The present investigation has shown that *L. barbarum* is good and potential source of diosgenin.

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1. Madaeva, O. S. and Stenpanova, L. F., *Med. Prom. S.S.S.R.*, 1965, 19, 49.
2. Mookherjea, S. and Methew, R., *J. Indian Chem. Soc.*, 1969, 46, 749.
3. Guerreiro, E., Giordano, O. S., Kavka, J. and D'Arcangerlo, A. T., *An. Quim.*, 1971, 67, 789.
4. Urzua, A. and Cassels, B. K., *Phytochemistry*, 1972, 11, 3548.
5. Giordano, O. S., Kavka, J., Gianello, J. C. and D'Arcangelo, A. T., *An. Assoc. Quim. Argent.*, 1973, 61, 47.
6. Saleh, A. A., *Pharmazie*, 1974, 29, 346.
7. Doepke, W., Hess, U. and Padron, G., *Pharmazie*, 1976, 31, 133.
8. Khanna, Pushpa and Rathore, A. K., *Indian J. Exp. Biol.*, 1977, 15, 808.
9. Jeong, Tae Myoung, Yang, Min Suk, and Nah, Hyo Hwan, *Hanguk Nanghwa Hakhoe Chem.*, 1978, 21, 51.
10. Yashimura, Yoke, Take, Tsuneko and Otsuka, Hitoshi, *Kaseigaku Zasshi*, 1969, 20, 480.
11. Endo, Setsuko and Mitsuhashi, Tatsuo, *Tokyo Gakugei Daigaku Kyo, Dai-4-Bu*, 1974, 26, 128, 31.
12. Nag, T. N., Mathur, C. S. and Goyal, S. C., *Comp. Physiol. Ecol.*, 1979, 4, 157-160.
13. — *Indian J. Pharm.*, 1976, 38, 80.