septate at the base, 2 to 3 times coiled at the apex and branched. Branches 2 to 6 times coiled; finely roughened, brown, broader at the base and tapering towards the apex. Asci cylindrical, hyaline, stipitate, 8–spored, 35·5–50·5 × 4·5–6·5 μ. Ascospores uniseriate, lemon-shaped, lenticular, sub-apiculate, dark brown, 5·6–7·7 × 4·3–5·6 μ.

Subculture deposited at C.M.I., Kew, England under the accession number IMI 160294.

3. *Achaetomiella virescens* v. Arx, 1970, The Genera of Fungi Sporulating in Pure Culture, *J. Cramer, Lehre*, p. 247.

Perithedia partly superficial, partly immersed in culture, subglobose to ellipsoidal, ostiolate, dark olivaceous brown, 152·2–214·6 × 127·6–171·0 μ. Hairs few, mosty present near the apex around the ostiole, simple, septate, brown, finely verrucose. Asci clavate, stipitate, 8–spored, evanescent, 28·3–44·0 × 10·5–15·0 μ. Asdospores irregularly arranged, oval ovate to broadly ellipsoidal, brown, with terminal germ pores, 8·9–11·4 × 5·6–6·8 μ.

Subculture deposited at C.M.I., Kew, England under the accession number IMI 161617.

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PHYLLACHORA CROTONIS (COOKE) SACC. A NEW RECORD FROM INDIA

Phyllachora crotonis (Cooke) Sacc., was collected by the authors from the leaf spot of *Croton oblongifolius* Roxb. Mahson, a wild host growing in Rajmahal hill, Bihar. It develops characteristic tar-spot symptoms on the leaves. It has not been reported from India[1–4] and the host is also a new record. It was reported earlier[5] from the leaves of *Crotonis sylvatici*. The morphological details of the fungus are as follows :

Stroma black, rounded, erumpent, amphigenous, scattered, shining, about 0·20 mm in diameter, convex. Pseudoperithecia in dense group, paraphysate, asci clavate, octosporous 100–140 μ × 4–6 μ; ascospores hyaline uniseriate, oval, 12–16 μ × 3–4·5 μ.

The specimen is deposited at C.M.I., Kew, England, under accession no. IMI 215181.

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NEUTRAL SALT SOLUBLE COLLAGEN FROM THE ADDUCTOR MUSCLE OF AMUSIUM (BIVALVIA)

VIRCHOW[8] pointed out that the fibroblast secreted a soluble substance which became fibrillated outside the cell. Wolbach[9] found that the collagen formation was preceded by the formation of amorphous matrix which was considered to be mucopolysaccharide. Cooper and Davidson[2] studied the effect of ultraviolet irradiation on soluble collagen. Collagen extracted with dilute acetic acid was shown to form a fibrous precipitate having all the tinctorial properties of collagen. Neutral salt soluble fraction can be treated as the precursor of insoluble collagen. So far, collagen studies have not been made on tissues other than the conventional skin, tendon and granulation tissue. The present study deals with the extraction of neutral salt soluble fraction from the adductor muscle of a marine bivalve *Amussium pleuronectes* (Linn.).

Material and Methods

Procedure of Copper and Davidson[2] was followed. The adductor muscles from young growing animals were extracted with five times their weight of 10% (W/W) NaCl solution at 0–4° for 96 hours. The extraction was repeated thrice. The extracts were centrifuged (14000 g and — 2°). The clear extracts were saturated with solid $(NH_4)_2\ SO_4$ and the precipitated proteins were collected by centrifugation. The precipitate was dissolved in M NaCl and dialysed against a large volume of this solvent to remove excess of salts. The protein solution was then filtered and brought to pH 3·4 with acetic acid. After

standing overnight the precipitated protein was collected and redissolved in 0·5 N acetic acid and centrifuged for 1 hr (32000 g at — 2°) to remove insoluble material. This is now 0·5 N acetic acid soluble collagen and it was precipitated by the addition of solid NaCl to give a final concentration of 5% (W/V). The collagen was dissolved in 0·5 N acetid acid and the solution centrifuged at 3200 g at — 2° for one hour. The solution was dialysed against three lots of 0·02 M Na_2HPO_4 until precipitation was complete. The precipitated collagen was redissolved in 0·15 N acetic acid and dialysed against several changes of this solvent and then freezedried. The amino acid analysis was done on technicon auto analyser.

TABLE I

Amino acid composition of the neutral salt soluble collagen

Amino acids	Residues/1,000 total residues
Hydroxyproline	80·0
Aspartic acid	37·96
Threonine	7·7
Serine	12·18
Glutamic acid	52·78
Proline	93·4
Glycine	280·5
Alanine	25·3
Valine	8·12
Methionine	0·812
Isoleucine	13·2
Leucine	18·9
Tyrosine	4·12
Phenylalanine	6·5
Hydroxylysine	2·4
Histidine	6·7
Lysine	30·45
Arginine	62·73

The amino acid composition of the neutral salt soluble fraction is not identical with that of insoluble collagen. The concentrations of the following amino acids in the soluble fraction are lower than those of insoluble fraction—hydroxyproline, aspartic acid, proline, glycine, glutamic, acid, alanine, methionine, valine, hydroxylysine and arginine. The following amino acids occur in higher concentrations in soluble fracions tyrosine, threonine, serine, isoleuoine, leancine, phenylalanine, histidine and lysine. Harkness[4] pointed out that all fractions of collagen type have high contents of both hydroxyproline and glycine but contain small amounts of tyrosine. On the other hand water soluble and citrate insoluble proteins show a reverse relationship in high contents of tyrosine and small amounts of hydroxyproline and glycine.

Neutral salt soluble fraction is not derived from ordinary fibrils. This fraction seems to be the precursor of native collagen that will be polymerized. Within this precursor the peptide chains are in the process of synthesis. The differences observed in the amino acid composition of the insoluble collagen and soluble collagen suggest that any conversion of this soluble protein ti collagen fibres must involve the addition of protein fraction relatively rich in tyrosine, histidine, lysine and proline and relatively low in hydroxyproline, alanine and serine. But in the present study it was found that proline content is not higher than the native collagen. It is tentatively suggested by Bowes *et al.*[1] that fibde formotion may involve the association of soluble protein with mucopolysaccharide fraction. It may be that some enzymatic modification of this molecule is required before polymerization can occur as in the case of fibrinogen fibrin transformation. The physiological role of this collagen seems to impart high viscosity to its solutions.

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