Shorea robusta Gaertn. f. (Family Dipterocarpaceae), a wood-species of Assam as well as India, is grown extensively throughout the country. The timber is highly durable and therefore, is used in various fields. However, decay of the timber and rot in the living trees is not uncommon. In the eastern part of the country, frequent incidence of the decay of the timber in use is found and on identity, the decay was found to be caused by *Irpex destruens* Petch.

Histopathological studies of the infected wood revealed that the hyphae of the pathogen ramify extensively in the vascular tissue of the host, adpressed closely to the long axis of the cell walls. The hyphae pass from cell to cell making bore holes. Reproductive bodies, the sporophores, develop outside the infected wood during the summer.

Growth of the fungus in vitro was found to be best adapted to 0.5% carboxymethyl-cellulose as the carbon source, with 0.3% ammonium phosphate as nitrogen source. No other carbon-nitrogen ratio was beneficial for dry weight production. Ammonium nitrogen was found to be best for the growth of the pathogen in vitro.
The pathogen, *Irpex destruens*, required micro-nutrients, like zinc sulphate, ferric citrate, cobalt chloride and manganese sulphate for its normal physiological functioning. The need of iron was notable. Calcium chloride did not prove to be effective for growth. Potassium hydrogen phosphate at concentration of 0.64 g. per 100 ml. of nutrient fluid supported highest growth as the source of phosphorus. Omission of any of the micronutrients lead to the malfunction of the physiology of the pathogen. Thiamine hydro-chloride was as essential as other micronutrients.

The fungus *I. destruens* had no mycelial growth at 0°C but had a wide temperature range with a optimum of 30°C. pH was another factor to regulate the growth habit.

*Irpex destruens*, which caused decay of *Shorea robusta* wood in the nature also caused decay (weight loss) in vitro. Cellulose, was more beneficial than carboxymethyl-cellulose, (in the nutrition media) to the effect of weight loss. The temperature of 30°C for mycelial growth of the pathogen and decay was coinciding. Time factor, rather than nitrogen in the media was more responsible for higher weight loss. Omission of nitrogen yeilded maximum weight loss.

Micro chemical tests revealed that the fungus utilized
more cellulose than lignin. Phenol-oxidase activity justified the poor utilization of lignin and therefore, the fungus could be placed in the brown-rot group.

Irpex destruens was found to produce exocellular enzymes like cellulase, pectinase and proteinase in the culture. Secretion of the enzymes varied in relation to the substrate. Phenol-oxidase activity was not pronounced. Extracts of naturally and artificially infected wood caused higher loss in viscosity of carboxymethyl-cellulose solution to indicate mycelial enzyme induction.

Cellulolytic activity was induced best by carboxymethyl-cellulose at 32°C. The system was thermotolerant and was stable at 35°C. Induction of the enzyme system was possible at pH range of 5.0 to 6.0 and was stable at a still higher pH. Proteinase activity was stronger than phosphotidase.

The fungus produced three kinds of pectinolytic enzymes. Protopectinase was better induced by pectin than other carbon sources, at 30-40 days of incubation. The effect of carbon source and incubation period was also true with polygalacturonase activity. Pectin-methyl-esterase activity was insignificant.
Wood-extracts, both of naturally and artificially infected wood had higher cellulolytic activity than that of healthy wood. Polygalacturonase activity was nil in wood-extracts from healthy wood.

Assemblage of so many factors, including high intensity of cellulase together with phenolase, pectinase etc. might be held responsible for the degradation of the wood tissue of *Shorea robusta* Gaertn. f. by *Ipnex destruens* Petch.