

Double Stranded RNAs in the Mushroom Virus X Complex of *Agaricus bisporus*

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Mushroom virus X (MVX) is a new disease of the commercial mushroom, *Agaricus bisporus*. When first recorded in 1996 it was associated with localised areas of pin suppression. It is now thought to be responsible for a range of symptoms. It seriously affected the UK mushroom industry in 2000/01 and has now been reported in Ireland, Holland and a number of other mushroom growing countries. The objectives of the work programme put in place to address this problem were to determine the relationship between major dsRNA bands present in the MVX complex and to sequence characterise major components; to develop an RT-PCR diagnostic test for separate viruses within the MVX complex and test commercial spawns and ARP cultures for virus presence; to characterise transmission of dsRNA elements between strains, assess effects of cross infection and determine significance of dsRNA partitioning during transmission through spores; and to determine the rate of spread of MVX into healthy compost from a point source

Analysis of diseased mushrooms has identified 26 double stranded RNA (dsRNA) molecules associated with MVX symptoms. Evidence collected to date suggests that MVX might be a complex of viruses, rather than a single virus. Three of these dsRNAs have also been shown to be present in asymptomatic mushrooms. Vertical transmission was shown to occur through production of single spore progeny isolates from infected sporophores. Partitioning of dsRNAs was shown to occur. To determine whether horizontal transmission occurred, dual-culture *in vitro* tests were performed using donor and acceptor strains. Cultures produced from these transmission lines contained a reduced number of dsRNAs compared with the original donor strains.

Sequence data has been generated for several dsRNAs.