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## **PRODUCTION OF ENZYMES FROM GRAPE STALKS AND WHEAT BRAN IN SOLID STATE FERMENTATION**

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### **Abstract**

Many agricultural wastes could be used to produce enzymes from fungi. In 2004, the Italian production of grains was about 22,1 million tons, higher than screw about 9 million tons and olives about 4,7 million tons ([www.istat.it](http://www.istat.it)). The hydrolytic demolition of the plant cell walls by lignocellulosic enzymes is one of the most studied approach to the valorization of agricultural wastes for the recovery of high value phytochemicals. The *Pleurotus ostreatus* is a white rot fungi who produce a wide range of extracellular enzymes to degrade complex lignocellulosic substrates into soluble substances that can be used as nutrients.

Lignocellulosic enzymes such as cellulase, xylanase, peroxydase, laccase, and arylesterase (caffeoylesterase and feruloyl esterase) were produced inducing through the growth of *Pleurotus ostreatus* in solid state fermentation using agro-food wastes (grape stalks and wheat bran) as substrates. Arylesterase activities were carried out as the prevalent on both the substrates, even if more significant values were found on grape stalks.

Our findings showed that the enzymatic production was strictly dependent to the periodic removal of the produced enzymes and the arylesterase activities seem to be particularly affected by this factor. A new model for enzymatic production was discussed in order to develop new solid state bioreactor designs using *Pleurotus ostreatus* capable to open interesting industrial approach.

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