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## Psychoactive indole alkaloids in higher fungi: New species and perspectives

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Sixty years ago, R.G. Wasson discovered an ancient cult in Mexico R.Heim classified the species in the genus *Psilocybe*. A.Hofmann published the isolation and synthesis of the psychoactive alkaloids psilocybin and psilocin. We discovered two new species in 1994. The unusually large and potent *Psilocybe azurescens* was found in the Pacific Northwest ,U.S.A..*Psilocybe natalensis* was the first psychoactive species ever discovered in South Africa. Additionally, we have published *Psilocybe germanica* as a new, wood-loving species from Germany in 2015. These mushrooms were differentiated from the other psychoactive species growing on wood chips.too. All collections differ in the amounts of indole alkaloids including the precursor of psilocybin,baeocystin.Psychoactive mushrooms from other genera have been reported with increasing frequency in last decades. The trimethylammonium analog of psilocybin (aeruginascin ) has only been reported in the hallucinogenic species *Inocybe aeruginascens* . Additionally, we found biotransformations of synthetic tryptamine derivatives in mycelial cultures of *Psilocybe*. These investigations should achieve new applications in biological research and medicine.

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## Multifunctional network-structured film coating for woven and knitted polyethylene terephthalate against cardiovascular graft-associated infections

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Multifunctional network-structured polymeric coat for woven and knitted forms of crimped polyethylene terephthalate PET graft was developed to limit graft-associated infections. A newly synthesized antibacterial sulfadimethoxine polyhexylene adipate-b-methoxy polyethylene oxide (SD-PHA-b-MPEO) di-block copolymer was employed. Our figures of merit revealed that the formed coat showed a porous topographic architecture which manifested paramount properties, mostly bacterial anti-adhesion efficiency and biocompatibility with host cells. Compared to untreated grafts, the coat presented marked reduction of adhered Gram-positive *Staphylococcus epidermidis* previously isolated from a patient's vein catheter by 2.6 and 2.3 folds for woven and knitted grafts, respectively. Similarly, bacterial anti-adhesion effect was observed for *Staphylococcus aureus* by 2.3 and 2.4 folds, and by 2.9 and 2.7 folds for Gram-negative *Escherichia coli* for woven and knitted grafts, respectively. Additionally, adhesion and growth characteristics of L929 cells on the modified grafts revealed no significant effect on the biocompatibility. In conclusion, coating of PET with (SD-PHA-b-MPEO) is a versatile approach offers the desired bacterial anti-adhesion effect and host biocompatibility.

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