

THE FUNGUS *MONASCUS*, PRODUCTION OF SECONDARY METABOLITES AND THEIR USE

Husáková M.¹, Patáková P.¹

¹*University of Chemistry and Technology, Prague, Czech Republic*

Filamentous fungi of the genus *Monascus*, especially the species *Monascus purpureus*, have been used in Southeast Asian countries, China, Japan, Thailand or the Philippines, for the preparation of various types of food for at least the last 1000 years, probably longer. The best known is red fermented rice (red yeast rice, hong-qu), i.e. rice after cultivation of the *Monascus* fungus, which is added, usually after drying in powder form, to confectionery, soya products, cheese, meat products and other types of food as a colouring and flavouring ingredient. In Europe, *Monascus* fungus is very little known, although a dietary supplement based on red fermented rice can be sold and the approved health claim can be used. The fungus *Monascus* produces polyketide secondary metabolites, such as yellow and orange pigments, by non-reducing polyketide synthase, fatty acid synthase and other tailoring enzymes with single enzyme activities. Red pigments are formed chemically by the reaction of orange ones with compounds containing primary amino groups, such as amino acids, peptides and nucleotides, at pH above 5. In addition to pigments, *Monascus* species may also produce other oligoketide compounds, namely the mycotoxin citrinin and monacolins. While the former is undesirable, the latter may be welcome in dependence on the intended use. Both pigments and other metabolites exhibit different biological activities.