Heavy metals accumulation by yeast fermented on lignocellulose hydrolysate

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Residues from agriculture and forestry, e.g. wood chips and wheat straw, can be used as cheap carbon sources to grow oleaginous yeast, which can be a valuable source of lipids and natural anti-oxidants for the food and feed sector. In principal, plants easily take up airborne and soil pollutants, including toxic heavy metals. However, risk assessment for food safety of oleaginous yeast grown on lignocellulose such as e.g. wood chips has not been performed yet. It is therefore recommended to control concentrations of heavy metals in substrates used for production of lipids for food and feed before such production can be commercialized. Hence, the aim of present study was to evaluate yeasts' ability to take up heavy metals during fermentation on lignocellulose sources. For this, oleaginous yeast was grown on wheat straw hydrolysate (hemicellulose: cellulose hydrolysate, 6:4) during four days. We investigated the presence of 13 heavy metals in both, lignocellulose hydrolysate and yeast biomass. Further safety assessment of yeast produced from lignocellulose hydrolysate on the presence of harmful (persistent organic pollutants) and health beneficial (carotenoids) compounds will be needed.