



Effects of rice husks and their chars from hydrothermal carbonization on the germination rate and root length of *Lepidium sativum*

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Currently, char substrates gain a lot of interest, since they are being discussed as a component in growing media, which may become one option for the replacement of peat. Among different thermal conversion processes of biomass hydrothermal carbonization (HTC) has been found to produce chars with similar acidic pH values like peat. The question however is, if these hydrochars, which may contain toxic phenolic compounds are suitable to be introduced as a new substitute for peat in horticulture. In this study rice husk were hydrothermally carbonized at 200° C for 6 hours, yielding in hydrochars containing organic contaminants such as phenols and furfurals, which may affect plants and soil organisms. We investigated potential toxic effects on the germination rate and the root length of cress salad (*Lepidium sativum*) in four fractions: i) soil control, ii) raw rice husk + soil, iii) unwashed rice char + soil and iv) acetone/water washed rice char + soil. It could be shown that phenols and furfurals, which were removed from the hydrochar after washing by 80 to 96% did not affect the germination rate and the root length of the cress plants. The lowest germination rate and root length were found in the soil control, the highest in the non-washed hydrochar treatment, indicating a fertilization effect and growth stimulation of cress salad by hydrochar. If this result can be confirmed for other target and non-target organisms in future studies, a new strategy for the production of growing media may be developed.