



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Avenacin A-1 Content of Some Local Oat Genotypes and the In Vitro Effect of Avenacins on Several Soil-Borne Fungal Pathogens of Cereals

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Abstract: Avenacins are a mixture of 4 major (avenacin A-1, B-1, A-2 and B-2) autofluorescent compounds that are accumulated in the roots of oats (*Avena* spp.), especially root tips, and that have antimicrobial properties. In this research, we screened 189 genotypes of the family Gramineae for autofluorescence and also quantified 35 *Avena* genotypes for avenacin A-1 content, which is the most abundant and toxic avenacin type. Screening under UV transillumination proved that none of the species, except for *Avena* spp. accumulated avenacins in their roots. We aimed to find a genotype that lacks avenacin A-1 in order to investigate fungus-oat interaction in that particular interaction. The avenacin A-1 contents of *Avena* spp. varied between 4.7 and 6.5 mg g⁻¹ fresh weight of root tips. Although there was significant statistical variation in means of avenacin A-1 contents, the search for a genotype that lacks avenacin A-1 was unsuccessful. A soil-borne fungi collection from cereals (*Culvularia* sp., *Drechslera victoriorae*, *Rhizoctonia solani* (A-6 type), *Pythium ultimum*, *Fusarium culmorum*, *F. nivale*, *F. oxysporum* and *F. poae*) was also included briefly in this research to assess the antifungal activity of avenacins. According to the bioassay, all fungi exhibited inhibition zones around the oat root extract with the exception of *P. ultimum*. This result suggests that avenacins might contribute to fungal disease resistance and could be used for disease resistance breeding for some major root colonizing fungi.

Key Words: oat, avenacins, phytoanticipin, saponins, disease resistance, phytoalexins

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