



The oat breeding program at INIA, Chile, begins a new research project aimed to obtain gluten-free genotypes.

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The oat breeding program of the Instituto de Investigaciones Agropecuarias (INIA, Chile) is beginning a new project: “Selection of gluten-free oat genotypes for celiac patients”.

The use of oats for strict gluten-free diets has been a controversial issue, due to celiac patients varying in their sensitivity to oat. Oats contain gluten-like prolamin proteins called avenins, which vary in composition. The potential immunoreactivity of different short amino acid motifs (epitopes) in avenin protein sequences varies widely.

In Chile, oats are not recommended for celiac patients because there is cross-contamination with gluten-containing grains such as wheat and barley during industrial processing and transportation. Moreover, the composition of avenin epitopes of the commercial varieties of oat available in Chile is currently unknown.

According to government regulations in Chile, gluten-free oats are allowed to contain up to 5 ppm of gluten, whereas, in the US and the EU, the maximum allowance is 10 and 20 ppm, respectively. Thus, the development of oat varieties that are safe for celiac patients is becoming one of the key goals of our breeding program.

The main objective of this project is to select oat genotypes suitable for celiac patients. Specific objectives are: 1) to study the variation in the avenins of a diverse group of oat genotypes, 2) to study the associations between these avenins, total protein content, and other traits important for the oat breeding program of INIA, and find DNA polymorphisms, 3) to determine the effect of fertilization rate and different environments on avenin and total protein content in genotypes contrasting for different avenins, and 4) to communicate the results to the community.

For questions or collaborations please feel free to contact Mónica Mathias at monica.mathias@inia.cl (oat breeding), or Patricio Hinrichsen at phinrichsen@inia.cl (molecular biology).