

(P19)

## Evaluation of ACE-inhibitory activity of enzymatic hydrolysates of proteins of different lupin species

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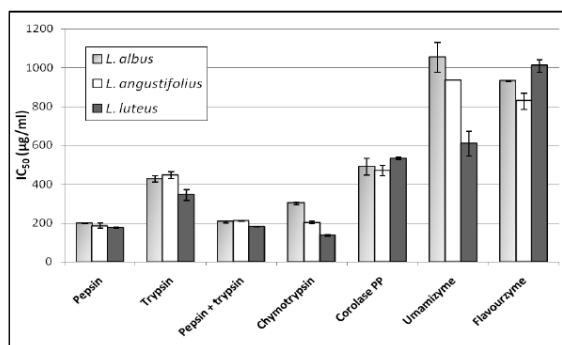
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**State of art and aim:** Lupin consumption may reduce systemic hypertension in animals and humans (Arnoldi *et al.*, 2015). Hypertension is usually treated with drugs, such as angiotensin I converting enzyme (ACE; EC 3.4.15.1) inhibitors. They act towards ACE, an enzyme that plays an important role in regulating blood pressure in the renin-angiotensin system, because it catalyzes the conversion of the biologically inactive angiotensin I to the potent vasoconstrictor angiotensin II and inactivates the potent vasodilator bradykinin (Skeggs *et al.*, 1956). The use of dietary supplements and functional foods are encouraged in subjects with mild hypertension to delay the use of synthetic drugs. Specific dietary ingredients are ACE-inhibitory peptides produced by hydrolyzing proteins from different animal or plant foods such as milk, soy, and pea. The objective of the present investigation is the comparison of the activity of peptides mixture obtained hydrolyzing with different enzymes the proteins of three lupin species, *L. albus*, *L. angustifolius*, and *L. luteus*.

**Results and discussion:** Pepsin gave peptides with the best ACE-inhibitory activity, followed by pepsin+trypsin, chymotrypsin, trypsin, corolase PP, umamizyme, and flavourzyme (see Figure). The three species showed similar activity scales, but after pepsin+trypsin and chymotrypsin treatments, *L. luteus* peptide mixtures resulted to be significantly the most active.

In conclusion, this investigation indicates that lupin proteins may be a valuable source of ACE-inhibitory peptides, which may explain the activity observed in experimental and clinical studies and foresee the application of lupin proteins into functional foods or dietary supplements.



### References:

- Arnoldi A *et al.* (2015) *Critical reviews in plant sciences*, 34:1-3, 144  
Boschin G *et al.* (2014) *Food Chem*, 145, 34  
Skeggs LT *et al.* (1956) *J Exp Med*, 103, 295

**Tags:** ACE-inhibitory activity, enzymatic hydrolysis, hypotensive activity