

## Poster

# WHEAT GLUTEN PROTEIN HYDROLYSATES ANTI-INFLAMMATORY STUDY



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## ABSTRACT

**Motivation:** It is known that some peptides have bioactive properties, anticarcinogenic, anti-inflammatory or antimicrobial among others. Lately, researches made in this area have been focused on vegetable sources peptides, which have shown a great capacity of having anti-inflammatory effects. Therefore, the aim of this investigation was to check wheat gluten hydrolysates anti-inflammatory capacities.

**Methods:** 1) Wheat gluten was used as starting material, which was hydrolysed with two different enzymes each on their own, Alcalase 2.4L and Izyme AL during 1 and 2 hours respectively, taking samples each 15 minutes (named A0, A15, A30, A45, A60; I0, I15, I30, I45, I60, I75, I90, I105, I120). The hydrolysis grade was obtained using 2,4,6-trinitrobenzene sulfonic acid (TNBS) method. 2) In order to determine their immunomodulatory capacity, the inhibitory effect of each sample was tested among chronic inflammatory diseases pathways common enzymes: thrombin and angiotensin-converting enzyme (ECA). 3) Blood cells, monocytes, submitted to lipopolysaccharide (LPS) infection, were incubated for 24 hours with A45 and I90 at different concentrations (10µg/mL and 5µg/mL) for the purpose of seeing IL-1β, TNF-α (pro-inflammatory proteins) and IL-10 (anti-inflammatory protein), cytokines genes expression change; studied by Q-PCR.

**Results & Conclusions:** 1) The more was the time that were being hydrolysed, the bigger was the hydrolysis grade, reaching a maximum of 36% of it with Alcalase 2.4.L and a 11,869% with Izyme. 2) The hydrolysates named as A45 and I90 were the ones that shown the most effective inhibitory effect above inflammatory enzymes; their physicochemical features should be studied for understanding it. 3)The hydrolysates chosen in the enzymatic tests (A45 and I90) showed to have a anti-inflammatory activity potential on cells, since in most cases they tend to repress pro-inflammatory genes expression (TNF-α and IL-1β) and enhanced the expression of other anti-inflammatory cytokines such as IL-10 (in all cases). Therefore, this study reveals that the inclusion of wheat gluten protein hydrolysates on our diets could help in the treatment of inflammatory diseases.

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