Can chicken gelatin kill bugs?
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BACKGROUND
- The valorization of by-products is one of the main reasons to explore proteins/peptides functionality and bioactivity;
- Gelatin from by-products is one of the most popular biopolymers widely utilized in various industries for its unique properties;
- Therefore, gelatin hydrolysates with further incorporation of saccharides could extend their range of functions in food systems.

OBJECTIVES
- Analyze antimicrobial activity of the different fractions obtained from glycated/glycosylated poultry gelatin hydrolysates;
- Identify the compound/compounds with antimicrobial activity. Is there any synergy between glycopeptides?

OUR APPROACH
1. Hydrolysate preparation:

   ![Flowchart of Hydrolysate Preparation]

   - Gelatin
   - Poultry by-products
   - Enzymatic hydrolysis
   - Endopeptidase
   - Incubation
   - Filtration
   - Freeze-dried or liquid system

2. Incorporation of sugar:

   ![Flowchart of Incorporation of Sugar]

   - Glycation
   - Glycosylation
   - Enzymatic reaction
   - Non-enzymatic reaction
   - Hydrolysate/sugar solution
   - Incubation (25°C and 37°C)
   - Ultrafiltration
   - Antimicrobial activity tests

3. Fractionation:

   ![FPLC Chromatogram](Hong P., et al 2013. Submitted paper)

   - Fractionation of glycopeptides using FPLC (fast protein liquid chromatography).

4. Antimicrobial activity on E. coli and B. subtilis:

   - MIC: smallest amount to inhibit bacterial growth
   - MBC: smallest amount to kill bacteria

   ![Isolates Chromatogram](Figure 2. Isolates chromatogram)

   - Fraction/isolates dilution
   - Control
   - Treated

5. Isolation and identification:

   - Isolation of the different peptides/glycopeptides from the active fraction to analyze antimicrobial activity.

WHAT TO EXPECT?
- Isolated glycopeptides from chicken gelatin that can act as preservatives in food systems to extend shelf life;
- Active compounds from chicken gelatin added to meat and dairy products to minimize food borne diseases by killing bacteria.

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