

The instant beverage formulation from small crab chitosan's (*Portunus pelagicus*) and green tea

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Introduction

Production of chitosan from the small crab shells has become an alternative solution of some problems of water pollution in Indonesia. Chitosan, the polymer of N-glucosamine with β -1,4 bond, has a hypocholesterolemic property by binding cholesterol, lipids, and several other lipid derivatives when passing through gastrointestinal tract, and secreting them into faeces [1].

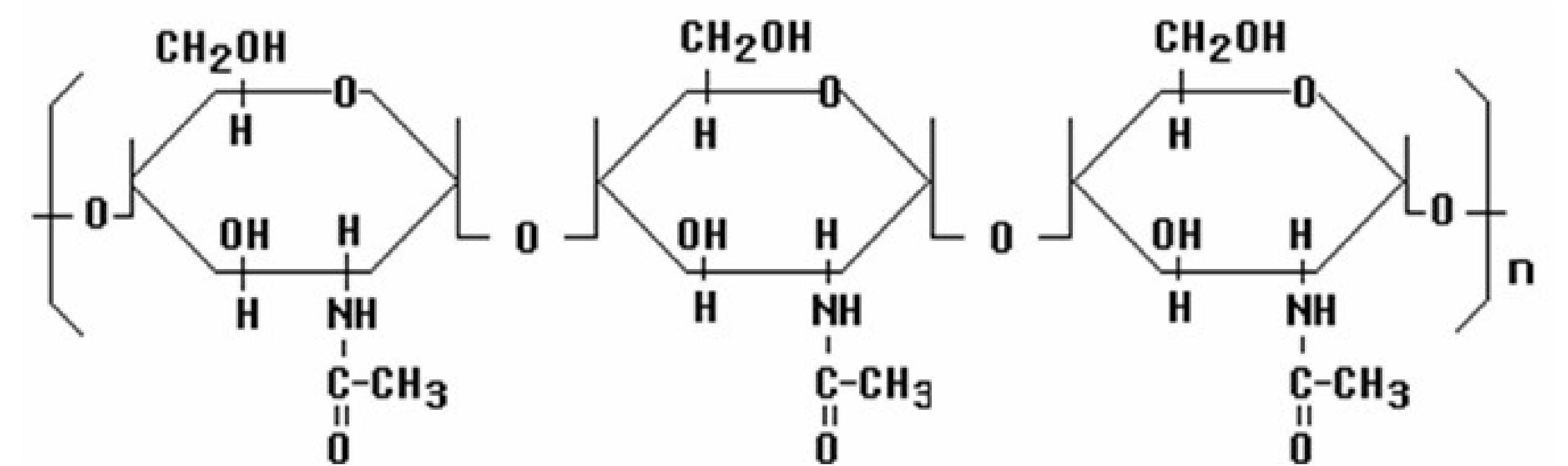


Fig. 1: Structure of chitosan [4]

Objectives

To develop a new food product using chitosan from the small crab shells (*Portunus pelagicus*). The product is an instant beverage formulated from chitosan and green tea. Green tea was selected because having a familiar taste, on contrary with chitosan which is tasteless and novel. This combination is expected to be able to produce the preferable food product.

Methods

- Small crab chitosan's (degree of deacetylation 72.36% and viscosity 19 cP) was produced by using the modified method of Suptijah et al. [5] (1:14 NaOH 50% v/v, $\pm 140^{\circ}\text{C}$, 2 hours).
- Assessment was performed by running two sensory evaluation stages using 30 trained assessors [2].
- First stage was established to formulate the most preferable instant chitosan by using edible film technique producing 8 different recipes from full factorial design between solvent (acetic 1% and lactic 1% v/v) and sorbitol concentration as plasticizer (0; 2.5; 5; and 10 g/L).
- Second stage was established to formulate the most preferable combination between instant chitosan (5 g/L) and green tea extract (2.5; 5; and 10 g/L).
- Preference were measured by using overall simple ranking test [3] in the both stages.

Results

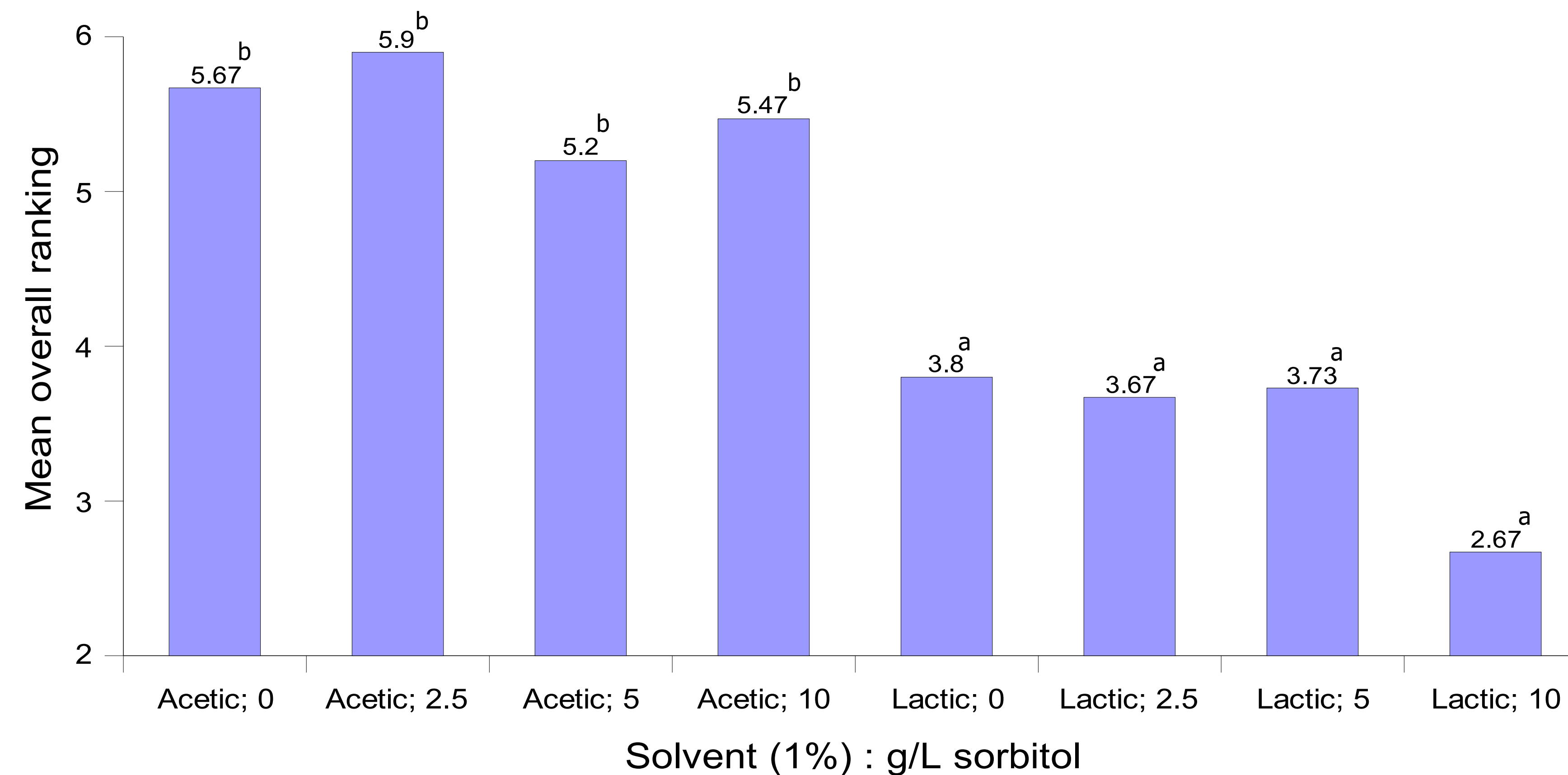


Fig. 2: Mean overall ranking of instant chitosan

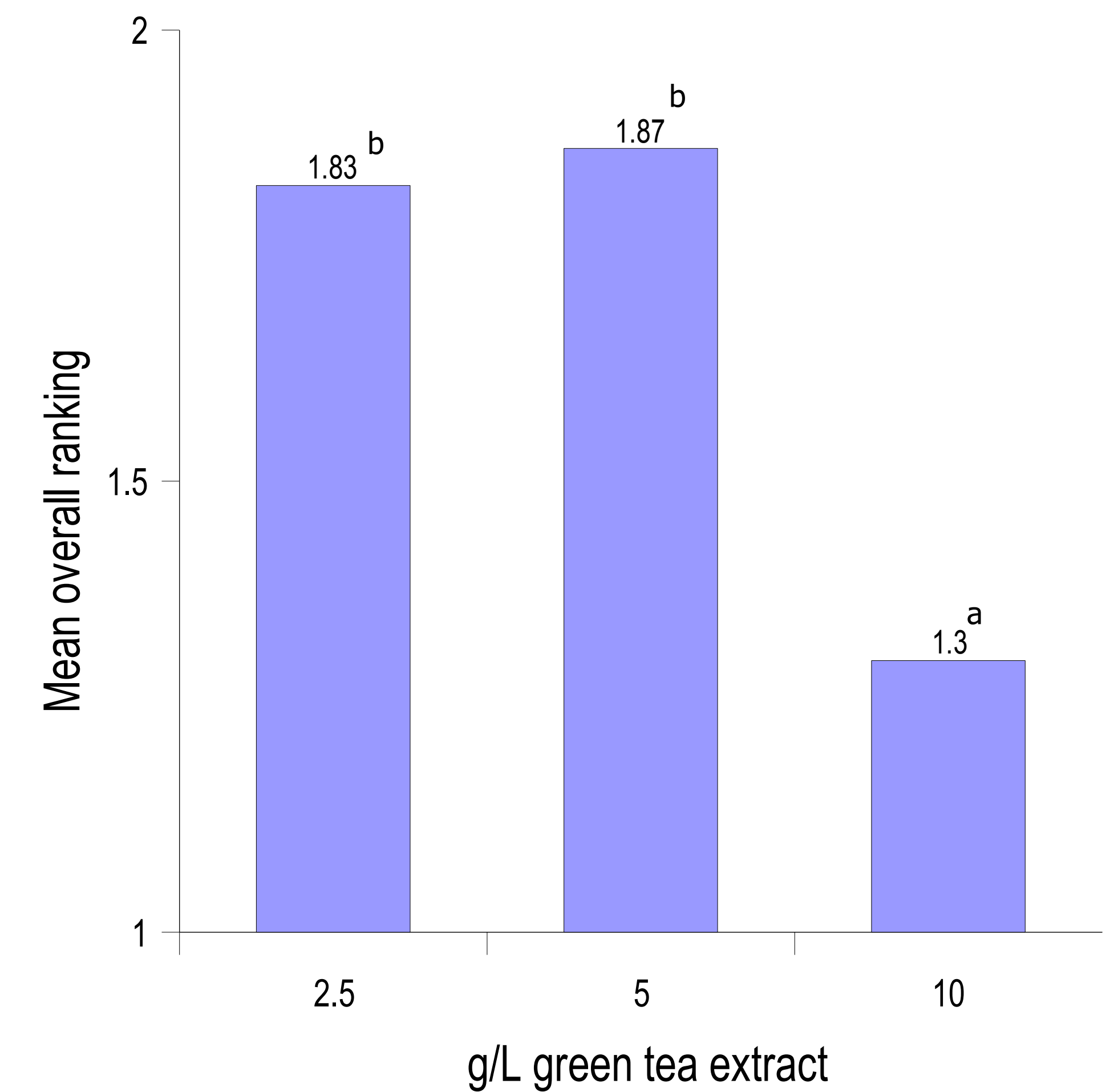


Fig. 3: Mean overall ranking as a function of the combination between instant chitosan and green tea extract



Fig. 4: a) Instant chitosan; b) Green tea extract; c) Final product

Conclusion

- Acetic 1% v/v and sorbitol 2.5 g/L produced the most acceptable instant chitosan.
- Combination of 5 g/L instant chitosan and 2.5 g/L green tea extract was chosen as the most preferable combination.
- Assessment of functional effect from this new product still need to be further developed

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