

In this manuscript, the exopolysaccharide from *Bacillus haynesii* CamB6 was exhaustively characterized.

Comment 1: Unfortunately, its structure was not fully determined.

Answer 1: To better understand EPS chemical structure, further 2D NMR experiments were performed and results are presented inside the manuscript. In short, they allow to clearly identify the D-mannose α -(1→2) and α -(1→4) linkages in EPS. These results suggest they are the prevailing units of the EPS backbone making it a branched one. Also, β -glucopyranose and β -galactopyranose structures were identified and the acetylation was confirmed.

Comment 2: The manuscript is very long: it contains a lot of information and many references not always pertinent to EPS characterization.

Answer 2: As suggested by the reviewer, the non-pertinent references has been checked throughout the manuscript and unnecessary references are removed too.

Comment 3: Optimization of production constitutes an important part not mentioned in the title.

Answer 3: As suggested by the reviewer, now the title include the production optimization too and the new title is “Optimization and characterization of a novel exopolysaccharide from *Bacillus haynesii* CamB6 for food applications”.

Comment 4: Acceptability for food applications was not discussed.

Answer 4: As suggested by the reviewer, the acceptability for food application has now been mentioned with appropriate refences (Nicolaus et al., 2010; Kambourova et al., 2018; Gongi et al., 2022) in the revised version of the manuscript.

Comment 5: English language should be revised thoroughly. There are inconsistencies in singular-plural concordance between subject and verb as well as noun and pronoun. Verb tenses should be checked. Articles (mostly definite, but also indefinite) are often missing and sometimes superfluous.

Answer 5: According to reviewer’s suggestion, the language of the manuscript is thoroughly revised.

Comment 6: EPS vs. EPSs in plural form should be consistent throughout.

Answer 6: As suggested by the reviewer, the consistent of the word had been checked throughout.

Comment 7: Use a consistent abbreviation (l or L) for liter (including milliliter and microliter) throughout.

Answer 7: Constant abbreviation had been checked throughout in the revised version of the manuscript.

Comment 8: ll. 50-51: “improvement of rheological”

Answer 8: Suggestion has been included in the revised version of the manuscript

Comment 9: l. 57: “stabilizing”

Answer 9: Suggestion has been included in the revised version of the manuscript

Comment 10: l. 133: “in nutrient”

Answer 10: Suggestion has been included in the revised version of the manuscript

Comment 11: l. 143: “min” instead of “mins”

Answer 11: Suggestion has been included in the revised version of the manuscript

Comment 12: l. 145: “volume of chilled acetone was added”

Answer 12: Suggestion has been included in the revised version of the manuscript

Comment 13: l. 160: There is no coded value in Table 1. (RSM)

Answer 13: Accoding to the suggestion of the reviewer, Table 1 is revised and both coded – noncoded values are now included.

Comment 14: l. 165: Table 2 where Table 1 expected

Answer 14: Both the tables (table 1 and table 2) have been placed in the proper place where it expected in the revised manuscript.

Comment 15: l. 169-170: “thirty” instead of “thirteen”?

Answer 15: The suggested correction has been done in the revised version of the manuscript

Comment 16: l. 177: “ β_i ” instead of “ β_0 ” in second term? (RSM)

Answer 16: The corrected has been made now.

Comment 17: l. 228: GPC defined on l. 231 (check)

Answer 17: The revision has been made as suggested.

Comment 18: l. 230: PEG undefined

Answer 18: as suggested by the reviewer, PEG has been defined in the revised version of the manuscript

Comment 19: l. 247: Volume of 0.2 mM ethanolic DPPH solution?

Answer 19: The volume is now added in the revised version of the manuscript.

Comment 20: ll. 255, 286, and 441: “et al.”

Answer 20: Suggestion has been included in the revised version of the manuscript throughout.

Comment 21: l. 284: No section 2.6.3

Answer 21: As per the suggestion given by the reviewer, section numbering has been checked thoroughly in the revised version of the manuscript

Comment 22: Figure 1: What is the significance of the tick mark labels on the maps? Are these maps really necessary?

Answer 22: This to kindly mention to the reviewer, the map is the collection site of the EPS producing *Bacillus haynesii* CamB6. This is a first such report from this collection site, the map is necessary to keep in the manuscript.

Comment 23: l. 340: “source”

Answer 23: Suggestion has been included in the revised version of the manuscript

Comment 24: Figure 2: No x-axis label, Units not specified

Answer 24: Figure 2 has been modified as suggested by the reviewer.

Comment 25: l. 400: “affected”?

Answer 25: Suggestion has been included in the revised version of the manuscript

Comment 26: Figure 3: Units are not specified on the axes labels or in the legend.

Answer 26: As suggested by the reviewer, Figure 3 is now modified with specified units of the axes and also in the figure legend.

Comment 27: l. 414, Delete “(“before “C. pH”. ll. 416 and 432 , Add “C.” before “pH=” . ll. 417 and 432 , “30.0” instead of “3.0” ?

Answer 27: All the Suggestion has been included in the figure legend of revised version of the manuscript

Comment 28: Figure 4; This figure is redundant as it gives the same information as Figure 3. Tick label values for glucose and yeast extract are different. Units are not specified on the axes labels or in the legend.

Answer 28: To avoid the redundancy of the figures as suggested by the reviewer, figure 4 is removed from the revised version of the manuscript.

Comment 29: ll. 433, 434, 454, 458, and 507 : First section 3.6 (and its subsections) should be section 3.5.

Answer 29: As per the suggestion given by the reviewer, section numbering has been checked thoroughly in the revised version of the manuscript

Comment 30: l. 442: “C), whereas the”

Answer 30: Suggestion has been included in the revised version of the manuscript

Comment 31: l. 471, 600, 678, and 718: Reference format is different; corresponding references could be missing in the list.

Answer 31: This has been checked now and revised.

Comment 32: l. 480: Why was linkage analysis not performed?

Answer 32: We performed 2D-NMR analysis , which allows us to determine exactly the α -Manp linkage, which is the major sugar component, and the β - structure of Galp and Glucp.

Comment 33: ll. 481-482: “spectrum”

Answer 33: Suggestion has been included in the revised version of the manuscript

Comment 34: I. Figure 6: Bacterial EPSs are normally composed of repeating units. Based on the ¹H NMR spectrum, the purity and/or heterogeneity of the EPS is questioned.

I. This EPS was carefully purified according to standard purification protocols for EPS.

→ This is a heteropolysaccharide composed of 3 different sugars as determined for HPLC, which is highly common in this kind of polysaccharides isolated from bacterial strains ([10.3390/foods11020156](#))

II. How can the authors ascertain that mannose does not come from mannans in yeast extract?

→ There are several earlier report where different concentration of yeast extract is added to the culture media for optimized EPS production, and the resultant EPS also consisted of mannan. However, there is no report that the mannan came from yeast extract (DOI: 10.1016/j.ijbiomac.2019.09.139, DOI: 10.1023/B:WIBI.0000033068.45655.2a). The same applies for our study too. In addition, the yeast mannan have β -(1→4) linkage and the one found in this work have α -linkage type. This allows us to conclude they are different polysaccharides.

III. A 2D COSY spectrum would be necessary to confirm the assignments made on the 1D: e.g., H2- Man is not normally found in the range 3.2-3.5 ppm (the statement ll. 495-496 is wrong).

→ Several 2D-NMR spectra were performed to confirm ¹H and ¹³C chemical shift of EPS structure, and their analysis was added to the manuscript.

Comment 34: The abbreviation for glucose is Glc.

Answer 34: It was corrected in manuscript

Comment 35: l. 500 : The chemical shift range is more than from 1 to 5.

Answer 35: A new discussion of 1D and 2D NMR spectra was added and corrected.

Comment 36: ll. 528 and 531: “radical”

Answer 36: Suggestion has been included in the revised version of the manuscript

Comment 37: l. 535 and 536: “activity”

Answer 37: Suggestion has been included in the revised version of the manuscript

Comment 38: l. 537: No section 3.6.2

Answer 38: According to the suggestion, section numbering has been checked thoroughly in the revised version of the manuscript.

Comment 39: l. 581: “Table S1A”

Answer 39: Suggestion has been included in the revised version of the manuscript

Comment 40: l. 603: “Figure S1”

Answer 40: Suggestion has been included in the revised version of the manuscript

Comment 41: l. 636: “Glc and Gal”

Answer 41: As suggested by the reviewer, the necessary revision is done in the manuscript.

Comment 42: l. 683-684: Food-grade oils are not aliphatic and aromatic hydrocarbons.

Answer 42: As suggested by the reviewer, the information is corrected and revised now.

Comment 43: l. 711: “to be significantly”

Answer 43: Suggestion has been included in the revised version of the manuscript

Comment 44: l. 725: “possibility of future”

Answer 44: Suggestion has been included in the revised version of the manuscript