**REPLY TO REVIEWER’S COMMENTS**

The authors would like to thank the reviewers for their valuable suggestions. The changes have been made in the manuscript accordingly and mentioned in red color font. Point wise reply is as follows:

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| **SI No.** | **COMMENTS** | **REPLY** |
|  | **Reviewer#1 specific comments** |  |
|  | In some sections more references could be included to support the arguments.Below are some comments that could improve the manuscript: | References supporting the statements have been added |
| 1.1 The Role of Leptin in Aging. Leptin and Cellular Processes:…. Moreover, it may contribute to the repair of damaged DNA, thusparticipating in the preservation of cellular integrity [6]….. Reference 6is related to a liver tumor line, not to a physiological process such asaging. It would be more convenient to look for a more accurate reference.1.2 The intricate interaction between leptin and cellular aging involves themodulation of key pathways, including those related to oxidative stress andinflammation [7]. (reference 7 is restricted only to the muscle. You couldlook for some more reference.1.3 Impact on Telomeres:Telomeres, the protective caps at the end of chromosomes, play a vital rolein cellular aging. Research suggests that leptin may have an impact ontelomere length maintenance. (It should be supported by some reference)1.4 Interaction with Insulin:Leptin's interaction with insulin forms a crucial aspect of its involvementin aging. These hormones share a delicate relationship in regulatingmetabolism. Leptin, produced by adipose tissue, signals the brain about thebody's energy status, influencing appetite and energy expenditure. Intandem, insulin regulates glucose metabolism.( Insulin at the brain levelhas many effects also related to the effects of leptin that should at leastbe mentioned.) Dysregulation in either of these systems can contribute toage-related metabolic disorders [9]. In my opinion reference no. 9 should beno. 101.5 However, in mammals, the sequence of hormone actions is unresolved dueto the interdependence of insulin, insulin-like growth factor-1, growthhormone, and thyroid hormones. (It should be supported by some reference)1.6 Despite parallels in insulin-like peptides and signal cascades acrossmammals and invertebrates, additional research is needed to determine ifthese signals uniformly control aging mechanisms across species [10]. In myopinion this reference does not correspond to the text.1.7 Leptin and Age-Related DiseasesDiabetes mellitus:Administration of leptin as a therapeutic intervention has been documentedto ameliorate insulin resistance in muscles and the liver among individualswith lipodystrophy. (It should be supported by some reference)1.8 Additionally, it has been shown to inhibit liver gluconeogenesis,suppress lipolysis, and mitigate fasting hyperglycemia in animal models withdiabetes [14].( reference 14 is a Review Article from clinical data, notfrom animal models.1.9 Neurodegenerative diseases: Leptin treatment induces an increase in ATPand p-Akt levels while concurrently reducing lactate dehydrogenase. Forgreater clarity all abbreviations should be explained (p-AKT)1.10 Leptin in Longevity….. In both leptin receptor mutant db/db mice andleptin-deficient ob/ob mice, there is an absence of SIRT1 activation in thehypothalamus in response to CR [26]. This reference 26 does not refer toanimal models s but with patientsThere are also some typographical errors:- Interaction with Insulin: Understanding how leptin influences insulinsensitivity provides insights into potential interventions to mitigate theimpact of aging on metabolic health (.) Reduced insulin-like peptidesignaling extends the lifespan of nematodes, flies, and rodents….. I- Reduced insulin-like peptide signalling extends the lifespan of nematodes,flies, and rodents. | Section has been rewritten with suitable referencesSuitable references have been addedSection has been rewritten with suitable referencesSection has been rewritten with suitable referencesSection has been rewritten with suitable referencesSection has been rewritten with suitable referencesSuitable references have been addedSection has been rewritten with suitable referencesFull forms have been mentionedSection has been rewritten with suitable referencesSection has been rewritten with suitable references |
|  | **Reviewer#2 specific comments** |  |
|  | Originality and Novelty. The review article titled "Leptin and Aging:Intriguing link to Gut microbiota" reviews the different functions of leptinin relation to aging apart from the regulation of appetite and metabolism.Although the title seems to point only to the relationship with themicrobiota, different aspects are analyzed, so the title perhaps deserved tobe modified for a more generic one.Quality of Language. The language in which it is written is clear andconcise, which makes its content understandable.However, there are some typographical errors:- Interaction with Insulin: …..Understanding how leptin influencesinsulin sensitivity provides insights into potential interventions tomitigate the impact of aging on metabolic health (.) Reduced insulin-likepeptide signaling extends the lifespan of nematodes, flies, and rodents…..I- Reduced insulin-like peptide signalling extends the lifespan of nematodes,flies, and rodents | Title has been modifiedSection has been rewritten with suitable references |