228 Effects of butyrate, manna oligosaccharide, *Bacillus subtillis* and β-glucans from naked oat on growth performance of broilers. Amal Rouissi*[1], Frederic Guay[1], Martine Boulianne[2], and Marie-Pierre Létourneau-Montminy[1], *[1]Laval University, QC, Quebec, Canada, [2]Faculty of Veterinary Medicine, University of Montreal, Saint-Hyacinthe, Quebec, Canada.*

Nowadays, there is a need for alternative approaches to maintain feed efficiency and broilers health in the absence of Antibiotic growth promoters. Given the plenty of products available, we first used meta-analysis tool to quantify their effects on growth performance and highlight modulating factors on organic acid, prebiotics, and probiotics sub-database. The most used and efficient products has been identified and then tested in terms of growth performance and gut health. Three thousand-2-hundred and 20 male day-old Ross 308 chicks were fed in 3 phases: starter (0–10 d), grower (11–21 d) and finisher (22–34 d) with one of the 7 treatments: T1) Control diet, T2) T1+coated butyric acid (Novyrate C; 1.0, 0.5 and 0.25 kg/t in starter, grower, and finisher respectively), T3) T1+ mannan oligosaccharide (Actigen; 0.8, 0.4 and 0.2 kg/t in starter, grower, and finisher respectively), T4) T1+ Bacillus (Gallipro, DSM 17299; 0.125 kg/t), T5) T2+T3+T4, to assess synergy or antagonist effects, T6) a portion of corn-soybean meal replaced by 30% naked oat (β-glucans), and T7) T6+butyric acid, manna oligosaccharide and Bacillus to test positive effect of adding alternatives in naked oat diet. All diets were formulated to fulfill 96% of metabolizable energy and digestible lysine. Broilers were randomly distributed to 10 replicate pens of 45 broilers per treatment in a complete randomized block design. Using MIXED procedure (SAS Institute 9.4), contrasts were used to study: 1) T1vs T2, 2) T1vs T3, 3) T1vs T4, 4) T1 vs T5, 5) T1 and T6 and 6) T6 and T7. During the starter phase, there was an increase of ADFI (6%), ADG (15%) and decrease of FCR (9%) ($P < 0.001$) in T6 and T7 (naked oat diets) in comparison to T1. In grower phase, ADG remained higher and FCR lower in T6 and T7 ($P < 0.001$) and T4 (Bacillus) increased FCR in comparison to T1 (respectively, 3%; $P < 0.001$). In the finisher phase, butyric acid was the best alternatives with increase by 4% of ADG and decrease by 5% of FCR ($P < 0.01$). On the overall experiment, lower ADG was observed in T4 ($P < 0.01$) and highest FCR in T4 and T7 ($P < 0.001$). Finally, no significant effect of the treatment on mortality. In summary, the replacement of part of the corn-soybean meal by naked oat, which considered as β-glucans, improves growth performance especially during the starter phase; butyric acid improves growth performance while *bacillus subtillis* reduced it from the finisher phase in comparison to control. Results of gut health parameters will help understanding the mode of action of these additives and better using them in broilers diet.

Key Words: broiler, performance, alternatives, growth promoters, naked oat