0.9 mark (0.1 to 1.9) improvement in MMSE scores in human RCTs, though the results are quite heterogeneous ($I^2 = 94\%$) (figure 1). Subgroup analysis of MCI and AD models were divergent with a difference of -0.1 (-0.3 to 0.2) versus a 1.7 (0.9 to 2.5) difference in MMSE score between the two groups. Studies also report improvement in other cognitive tests, such as CERAD and RBANS. Meta-regression revealed that the improvement in MMSE scores is age-dependent ($p < 0.005$) in humans. Biomarker analysis suggests that probiotic supplementation upregulates anti-oxidative (\#MDA) and anti-inflammatory (\#hs-CRP) pathways. Studies also show an improvement in non-neurological symptoms such as in insulin sensitivity (\#HOMA-IR, \#QUICKI), and lipid profiles (\#TG, \#VLDL). However, an intervention study reported an increase in kynurenine:tryptophan ratio post probiotic supplementation, suggesting an activation of inflammatory pathways.

**Conclusions** Human study evidence generally shows an association between probiotic supplementation and improved neurocognitive function, although confounded by age and severity of neurodegeneration. Caution should be applied in the use of probiotics as an intervention for cognitive decline.

**Background** Prebiotics, as non-digestible substances that stimulate the growth and activity of beneficial bacteria, is hypothesized to improve neurocognitive function through the Gut-
Brain axis. This review therefore, investigates whether the administration of prebiotics is efficacious in attenuating age-related neurodegeneration.

Methods 2675 studies from MEDLINE, Embase, Scopus, Web of Science and Cochrane library were searched for in vivo studies using equivalent combinations of ‘prebiotics’ and ‘age-related neurodegeneration’ in concordance with PRISMA guidelines. Quantitative outcomes such as Morris Water Maze (MWM), a cognitive-behavioural task, were examined and pooled with Forest Plots for overall effect (95% CI) and heterogeneity (I²). Weighted meta-regression of the prebiotic-neurodegeneration association with other continuous parameters such as treatment duration, study sample size and year of publication were assessed for potential confounding associations.

Risk of Bias (RoB) for animal studies was assessed by the SYRCLE tool. Publication bias was analysed by the Begg-Mazumdar funnel plot. The potential conflict of interest in the source of funding was examined by subgroup analysis.

Results 5 human studies on aged healthy volunteers were found. 23 animal studies were identified, with 9 animal studies having comparable quantitative results (149 subjects). Overall results in figure 1 demonstrate a 17.69 sec (11.71–23.67; I²: 96.8) improvement in MWM Escape Latency, suggesting an improvement in neurocognitive function in animal models. Meta-regression revealed that prebiotic-neurodegeneration association is independent from duration of treatment (p=0.202), year of publication (p=0.184); and sample size (p=0.0685).

RoB analysis of animal studies on prebiotics shows that there is a risk for bias in terms of study personnel blinding and random housing and outcome assessment of subjects. An asymmetric distribution that is largely beyond the 95% CIs was observed in the Begg-Mazumdar funnel plot. 4 privately-funded studies had significantly weaker association of 12.67s (3.18–22.17) than 5 government-funded studies 21.61s (15.26–27.97).

Conclusions Weak evidence suggests that prebiotic supplementation is useful in attenuating age-related neurocognitive decline, thus requiring more clinical trials to evidence its true efficacy.

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**EFFICACY AND SAFETY OF ENDOSCOPIC BALLOON DILATATION COMBINED WITH LOCAL INJECTION OF BETAMETHASONE IN THE TREATMENT OF INTESTINAL STENOSIS IN CROHN’S DISEASE**

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**Background** To evaluate the efficacy and safety of endoscopic balloon dilatation (EBD) combined with local injection of betamethasone in the treatment of intestinal stenosis in Crohn’s disease (CD).

**Methods** A total of 51 patients with CD intestinal stenosis treated with EBD in the Sixth Affiliated Hospital of Sun Yat-sen University from August 2013 to June 2020 were collected, including 38 patients treated with EBD alone and 13 patients treated with EBD combined with local injection of betamethasone. The efficacy and safety of the two treatment methods were compared.

**Results** Among the 51 patients, there were 36 males and 15 females, the median age was 32 years old, average body mass index (BMI) was 19.23, combined with the perianal disease was 54.9%, follow-up time ranged from 0.4 to 78.6 months, and median follow-up time was 15.7 months. There was no significant difference in the disease course, activity, extraintestinal manifestations, perianal disease, endoscopic stenosis length, proximal CTE dilation diameter and other general information. In terms of treatment effect, there was no significant difference in treatment success rate (100% vs. 94.7%, P=1.000), symptom relief rate (92.3% vs. 84.2%, P=0.440) or complication rate (0 vs. 5.3%, P=1.000) in the EBD combined with local injection of betamethasone. In the follow-up after treatment, it was found that the EBD combined with local injection of betamethasone group had fewer CD drug upgrades (7.7% vs. 18.4%, P=0.329), a lower rate of endoscopic expansion (30.8% vs. 39.5%, P=0.575), and a lower rate of surgery (7.7% vs. 15.8%, P=0.440).

**Conclusions** Ileocecal valve and colorectal anastomosis is the most common CD merger of the digestive tract stenosis position, EBD combined with local injections of betamethasone treatment of digestive tract stenosis type CD curative effect is reliable and safer. While this method on non-anastomotic stenosis, the history of intestinal fistula and the stenosis and dilation of nodular hyperplasia are not good, so it needs to be differentiated and selected in the treatment.