ABSTRAK

Latar belakang: Anak *stunted* merupakan salah satu manifestasi dari defisiensi zink yang berdampak terhadap kualitas sumber daya manusia di masa akan datang. Suplementasi zink dari ekstrak ikan bilih *(M-padangensis)* sebagai bahan pangan lokal berkualitas, merupakan salah satu solusi yang perlu dikaji efikasinya untuk mengoptimalkan pertumbuhan fisik dan perkembangan anak *stunted* di Sumatera Barat.

Tujuan : Menguji efikasi suplementasi zink dari ekstrak ikan bilih *(M-padangensis)* terhadap pertumbuhan fisik, morbiditas dan perkembangan anak *stunted* usia 12-36 bulan.

Metode: Penelitian ini terdiri dari penelitian laboratorium untuk menyiapkan produk suplementasi zink dari ekstrak ikan bilih *(M-padangensis*), dilakukan di laboratorium Galenika Fakultas Farmasi Universitas Gadjah Mada Yogyakarta dan penelitian eksperimen murni dengan desain "*double blind randomized controlled trial"* untuk menguji efikasi suplemen zink pada anak *stunted* usia 12-36 bulan di Kecamatan Junjung Sirih Kabupaten Solok. Sebanyak 55 orang anak dibagi menjadi 2 kelompok dengan cara random alokasi sehingga diperoleh 28 orang anak untuk menerima suplementasi 10 mg zink/ hari dan 27 orang anak untuk kontrol (palcebo) selama 3 bulan. Efikasi suplementasi zink dianalisis menggunakan *t-test independent* dan *paired t-test* dengan tingkat kemaknaan $p<0,05$ dan CI 95% untuk data rasio dan χ^2 untuk data kategorik serta analisis *multiple linearregression* untuk melihat pengaruh variabel lain.

Hasil: Ekstrak ikan bilih mengandung zink sebanyak 161,97 mg/100 gram, dalam bentuk senyawa zink clorida (*zinc chloride*/$ZnCl_2$). Hasil penelitian menunjukkan suplementasi zink dengan dosis 10 mg/hari, meningkatkan tinggi badan anak lebih tinggi sebesar 3,.53 cm (95% CI 0,17-6,88), menambah panjang lutut tumit lebih panjang sebesar 6 mm (95% CI 0,03-1,16), dan meningkatkan status *stunted* atau nilai z-skor TB/U 1,3 poin ($p =0,00$ dan 95% CI 0,74-1,81) dibanding anak *stunted* yang tidak diberi suplementasi zink. Suplementasi zink dari ekstrak ikan bilih (*M-padangensis*) mempunyai hubungan erat dengan kejadian penyakit diare ($p=0,012$; 95% CI 0,367 – 1,152) dan kejadian penyakit ISP ($p=0,025$; 95% CI -2,933 –0,193). Terdapat perbedaan yang signifikan rerata nilai komposit pada domain kognitif ($p=0,05$, CI 21,36-1,36) meningkat sebesar 10 poin dan domain adaptif ($p=0,00$, CI 5,30-13,33) meningkat sebesar 13,32 poin, tetapi secara statistik tidak ada hubungan yang bermakna antara kelompok suplementasi dan kontrol. Hal ini kemungkinan disebabkan oleh kurangnya waktu intervensi karena suplementasi hanya bisa diberikan kurang dari 3 bulan.

Kesimpulan: Suplementasi zink dari ekstrak ikan bilih dengan dosis 10 mg zink/hari mempunyai efikasi terhadap pertumbuhan fisik (tinggi badan, panjang lutut tumit, nilai z-skor indek TB/U), morbiditas dan perkembangan kognitif anak *stunted* usia 12-36 bulan.

Kata Kunci: suplementasi zink, ekstrak ikan bilih, pertumbuhan fisik, morbiditas, perkembangan, anak *stunted*.

ABSTRACT

Introduction: *Stunted children are a primary manifestation of malnutrition, especially zinc deficiency which causes the quality of future human resources. Zinc supplementation which was obtained from bilih fish (M-padangensis) extract as local high quality foodstuff, was considered as one of solution needed for further efficacy examination in order to optimizing the physical growth and development of stunted children in West Sumatera.*

Objective: *to examine the efficacy of zinc supplementation from bilih fish (M-padangensis) extract toward the physical growth, morbidity and cognitive development of stunted children in 12-36 months age.*

Method: *This research was a laboratory research in order to prepare the zinc supplementation product from Bilih Fish (M-padangensis) extract which done in Galenika Laboratory, Pharmacy Faculty of GadjahMada University, Yogyakarta. Research of pure experiment was conducted by "double blind randomized controlled trial" in order to examine the efficacy of zinc supplementation which applied to stunted children 12-36 months age in Kecamatan Junjung Sirih, Kabupaten Solok. There were 55 children which were divided into 2 groups randomly. Thus, there were 28 children received 10 mg zinc supplementation/day and 27 children as kontrol variable (placebo) for 3 month. The efficacy of zinc supplementation was analyzed by applying t-test independent and paired t-test. In those test the significance level was set $p<0.05$ and CI 95% for ratio data and χ^2 for category data as well as for analysis of multiple linearregression in order to observe others influence variables.*

Results: *Bilih fish extract contained zinc, approximately there was 161,97 mg/100 gram, as zinc chloride/$ZnCl_2$. This research showed that zinc supplementation with a dose of 10 mg/day, will increase the height of children 3.53 cm (95% CI 0.17-6.88), and lengthen the knee heel by 6 mm (95% CI 0.03-1.16), as well as increase the stunted status or value of Z-score HAZ 1,3 point (p =0.00 and 95% CI 0.74-1.81) compared to stunted children which were not received zinc supplementation. The zinc supplementation product from bilih fish (M-padangensis) extract had significant relevancy to the incidence of diarrhea (p=0.012; 95% CI 0.367 – 1.152) and the incidence of Respiratory Tract Infections (RTI) diseases (p=0.025; 95% I -2.933 –0.193). There was significant differences of composite average values in cognitive domain (p=0.05, CI 21.36-1.36) which increased 10 point and adaptive domain (p=0.00, CI 5.30-13.33) which increased 13.32 point. However, statistically there was no significant relevancy between the zinc supplementation group and variable kontrol group. Thus condition was possibility caused by insufficient intervention time due to the supplementation only conducted in less than 3 months.*

Conclusion: *zinc supplementation from Bilih extract in dose 10 mg zinc/day had efficacy toward physical growth (height, length of knee heel, value of Z-score HAZ), morbidity and cognitive development of stunted children in 12-36 months age.*

Key words : zinc supplementation, bilih fish extract, physical growth, morbidity, development, stunted children.

.