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THE CORRELATION BETWEEN VITAMIN D LEVEL IN SERUM AND THE Univ PERCENTAGE OF BASOPHILS IN CHILDREN WITH ATOPIC DERMATITIS ISITAS Brawijaya FINAL ASSIGNMENT Universitas Brawıjaya niversitas Brawijaya To Meet the Requirements to Obtain a Medical Degree

BRAL JAL SITAS BRAN By: Jafrina Jasmin Binti Abdul Hakkeem

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STATEMENT OF AUTHENTICITY Universitat as the writer: Universitas Brawijaya Universitas Brawijaya Name: Jafrina Jasmin

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noti the sitas Brawijaya State that this final assignment is truly the work of my own, takeover of the writings or thoughts of others. If later proven that this final In assignment is plagiarized, I am willing to accept sanctions for my act.

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**Universitas Brawijaya** 

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Univelisitas Brawijaya ACKNOWLEDGEMENT Praise be to Allah, the Most Beneficent, the Most Merciful. The completion Brawleya of this final assignment titled, 'The correlation of Vitamin D level in serum and the awijaya Un percentage in basophils in children with atopic dermatitis in Saiful Anwar Hospital's tas Brawijava awijaya awijaya would not be possible without the help of many people. The writer would like to awijaya awijaya Unithankas Brawijaya awijaya awijava 1. Dr. dr. Wisnu Barlianto, M.Si.Med., SpA(K), as the Dean of the Medical awijaya ersita Program of Brawijaya University and the first supervisor of this final itas Brawijaya awiiava awijaya assignment who not only provided the writer with the opportunity to enrol awijaya awijaya in the medical program of Brawijaya University but also guided the writer awijaya to complete this final assignment awijaya awijaya 2. Dr. Bayu Lestari M. Biomed, the second advisor who provided many awijava awijava important suggestions to perfect this final assignment awijaya Dr. Dewi Erikawati Msi., as the examiner of this final assignment, whose 3. awijava awijaya advice and suggestions were useful awijaya dr. Tri Wahju Astuti, M.Kes., Sp.P(K) as the Head of the Medical Programsitas Brawijava awijaya 4. awijaya of Brawijaya University awijaya awijaya Univer 5.ª dr. Tita Luthfia whose guidance helped to perfect this final assignment versitas Brawijaya awijaya Univer 6. The lab analysts, doctors and administrative staff of Saiful Anwar Hospital itas Brawijava awijaya awijava who assisted in the collection of samples from patients awijaya awijaya Univer 7.4 The members of the Final Assignment Management Team of the Medical Itas Brawijaya awijaya versita Faculty, who assisted in administration tasks ersitas Brawliava The writer's parents, grandparents, sisters and entire family in Malaysia Universita and India for their constant love and support ersitas Brawijaya

awijaya awijaya 9. All parties who have directly and indirectly contributed to the completion of awijaya this final assignment who cannot be thanked one by one The writer is well aware of the limitations and shortcomings in this work. awijaya awijaya Uni Therefore, all criticisms and suggestions are welcome. May this final assignment it as Brawijava awijaya serve as a useful material to those who need it. awijaya awijaya awijaya awijaya awijaya awijaya awijaya MER awijaya awijaya

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Universitas Brawijaya **ABSTRACT** Abdul Hakkeem, Jafrina Jasmin. 2019. The correlation between the vitamin D level in serum and the percentage of Basophil in children with atopic dermatitis in Saiful Anwar Hospital. Final Assignment, Medical Program, Faculty of Medicine, Brawijaya University. Supervisors (1) Dr. dr. Wisnus Cas Brawijaya Uni Barlianto, M.Si.Med, SpA(K), (2) Dr. Bayu Lestari M. Biomed Brawijaya Universitas Brawijaya has the ability to repress inflammation Vitamin D and immunomodulatory property allows it to be used as a treatment for Atopic Dermatitis. Patients with Atopic Dermatitis have high amounts of Basophils in Itas Brawijaya their skin lesions. The aim of this study was to determine the correlation between the study and the level of Vitamin D and the percentage of Basophils in children with Atopic tas Brawijava Dermatitis in Saiful Anwar Hospital. In this crss-sectional study, the measurement of Vitamin D level in patients was conducted using the Enzyme-linked Immunosorbent Assays (ELISA) method. The values were measured in nmol/L. Meanwhile, Basophils were measured using a Hematolgy Analyzer. There were thas Brawijaya 12 patients in this study, five males and seven females, aged 6.33 ± 2.96 months. It as Brawliava There were seven patients with Vitamin D deficiency (25 (OH) D < 20 ng/mL). Three patients had Vitamin D insufficiency (25 (OH) D 20-30 ng/mL) and only two patients had sufficient amount of Vitamin D (25 (OH) D > 30 ng/mL). The relationship between Vitamin D level and Basophil percentage were analysed itas Brawijaya Un using the one-way Anova test and Pearson correlation. A significant negative it as Brawijaya correlation was detected between Vitamin D levels and Basophil percentage (page Brawling) =0.029, r = -0.626). In conclusion, there is a correlation between Vitamin D levels

and Basophil percentage in patients with Atopic Dermatitis. Whereby the lower the Vitamin D level, the higher the Basophil percentage.

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Keywords: Atopic Dermatitis, Vitamin D, Basophils

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Abdul Hakkeem, Jafrina Jasmin. 2019. Korelasi antara Vitamin D di serum dan presentase Basofil pada anak-anak dengan Dermatitis Atopik di Rumah Sakit Saiful Anwar. Tugas Akhir, Program Studi Kedokteran, Fakultas Kedokteran Universitas Brawijaya. Pembimbing: (1) Dr. dr. Wisnu Barlianto, M.Si.Med, SpA(K), (2) Dr. Bayu Lestari M. Biomed

Universita Vitamin D memiliki kemampuan untuk menekan peradangan dan properti das Brawijava imunomodulatornya memungkinkan ia untuk digunakan sebagai pengobatan untuk dermatitis atopik. Pasien dengan Dermatitis Atopik memiliki jumlah Basofil yang tinggi di dalam lesi kulit mereka. Tujuan dari penelitian ini adalah untuk itas Brawijaya mengetahui hubungan antara kadar Vitamin D dan persentase Basofil pada tas Brawijaya anak-anak dengan Dermatitis Atopik di Rumah Sakit Saiful Anwar. Desain tas Brawijaya penelitian ini adalah analitik observasional dengan pendekatan cross-sectional. Pengukuran kadar Vitamin D pada pasien dilakukan dengan menggunakan metode Enzyme-linked Immunosorbent Assays (ELISA). Nilainya diukur dalam nmol / L. Sementara itu, Basofil diukur dengan Hematology Analyzer itas Brawijaya menggunakan sampel darah pasien. Ada 12 pasien dalam penelitian ini, limasitas Brawijaya laki-laki dan tujuh perempuan, berusia 6,33 ± 2,96 bulan. Ada tujuh pasien sa Brawijaya dengan defisiensi vitamin D (25 (OH) D <20 ng / ml). Tiga pasien memiliki kekurangan vitamin D (25 (OH) D 20-30 ng / ml) dan hanya dua pasien yang memiliki jumlah vitamin D (25 (OH) D> 30 ng / ml) yang cukup. Hubungan antara Un kadar Vitamin D dan jumlah Basophil dianalisis menggunakan uji Anova satu itas Brawijaya arah dan korelasi Pearson. Korelasi negatif yang signifikan terdeteksi antara kadar Vitamin D dan jumlah Basofil (p = 0,029, r = -0,626). Kesimpulannya, terdapat korelasi antara kadar vitamin D dan jumlah Basofil pada pasien dengan Dermatitis Atopik. Dimana semakin rendah kadar Vitamin D, semakin tinggi tas Brawijaya Uni jumlah Basophil.

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Kata kunci: Dermatitis Atopik, Vitamin D, Basofil

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awijaya Universitas Brawijaya Universitas Brawijaya awijaya ABBREVIATIONS awijaya UniversitaAD: Atopic Dermatitisrsitas Brawijaya Universitas Brawijaya awijaya UniversitaCD: Cathelicidin Diversitas Brawijaya Universitas Brawijaya awijaya awijaya Universita ELISA: Enzyme-linked Immunosorbent Assays rsitas Brawijava awijaya awijaya UniversitaIG-E: Immunoglobulin E awijaya awijaya Universita IL-33: Interleukin-33 awijaya BRAN awijaya awijaya LPS: Lipopolysaccharides awijaya awijaya SPSS: Statistical Package for the Social Sciences awijaya awijaya TLR: Toll-like receptor awijaya awijaya TMB: Tetramethylbenzidine awijaya awijaya TSLP: Thymic stromal lymphopoeitin awijaya awijaya awijaya UVB: Ultraviolet B awijaya awijaya VDBP: Vitamin D binding protein awijaya 4.5 Universita VDR: Vitamin D receptor awijaya awijaya awijaya awijaya awijaya awijaya awijaya awijaya awijaya BRAWIJAYA awijaya

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awijaya Universitas Brawijaya<sup>1</sup> Universitas Brawijaya Universit INTRODUCTION iversitas Brawijava awijaya awijaya Uni 1.1 Background va awijaya awijaya awijaya Universita Atopy is the genetic susceptibility to develop allergic hypersensitivity. It as Brawliava awijaya Dermatitis is a term that refers to the inflammation of the skin that can have the Brawline awijava various causes and develops in multiple forms. Atopic dermatitis (AD) is awijaya awiiava awijaya Unicommonly known as eczema or atopic eczema, and is a chronic inflammatory it as Brawijaya awijaya skin disease (Kim et al., 2019). awijaya awijaya Atopic dermatitis is a skin disease which usually begins in early infancy as Brawlava awijaya awijaya but is also known to affect a decent number of adults. The incidence of AD is awijaya ersitas Brawijaya awijaya Univestimated to be 15-20% in children and 1-3% in adults. Approximately 13% of the Brawlaya awijaya children and 9.1% of adults suffering from AD were identified as Asians. In awijaya awijaya Indonesia, the prevalence of atopic dermatitis is approximately 1.1% in 13 to 14 tas Brawlaya awijaya Univear olds (Nutten, 2015). awijaya awijaya awijaya UniversitaThe pathogenesis of atopic dermatitis is contributed by various factorsitas Brawijaya awijaya such as genetic, mechanical, environmental, epidermal, pharmacologic and awijaya awijaya immunologic. In fact, a study in Hong Kong showed that atopic dermatitis in awijaya awijaya around 70% of patients is caused by genetic factors. Defective Fillagrin gene has it as Brawijava awijaya known to cause moderate to severe AD in up to one third of people in East Asia awijaya (Boguniewicz and Leung, 2013). The primary reason for the development of the Brawlaya In atopic dermatitis is defective skin barrier which allows the entry of antigens and tas Brawijava eventually causes the production of inflammatory cytokines. The main symptom of AD is said to be incessant pruritus or severe itching, which involves an as Brawlava Universitas Brawijaya Universitas Brawijaya

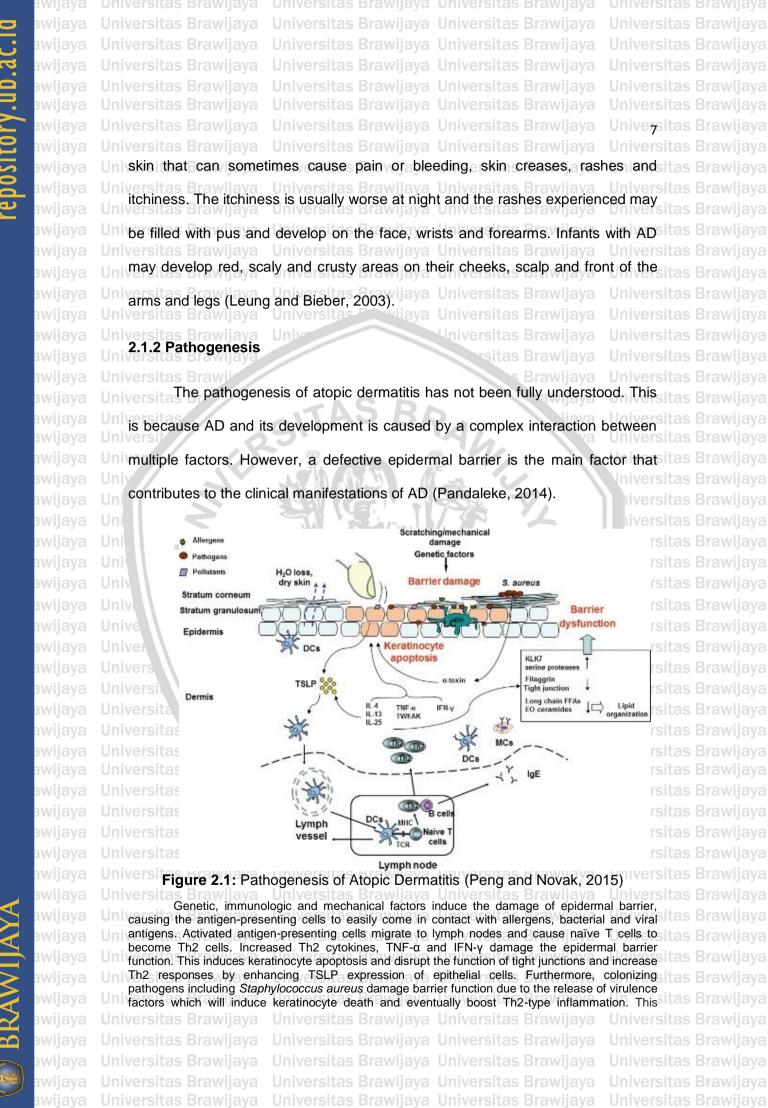
Universitas Brawijaya Un intermittent course of flares and remission that occur without known reasons. In it as Brawin children, some of the symptoms of AD include dry and scaly skin, lightened or darkened skin spots, rashes on the neck and face, especially around the eyes tas Brawlaya awijaya and thick skin also known as lichenification. When these children grow up, they awijaya awijaya may have discolouration and easily irritated skin (Baird, 2016). awijaya Universitas Brawijava awijaya In order to successfully treat AD, patients need a treatment that proves the awijaya awijaya skin with hydration and moisturization. The most important aspect of treating AD Itas Brawl awijaya is the identification and elimination of triggers. Some of the medications that can awiiava awijaya be used for severe AD include systemic or topical steroids as well as awijaya awijaya un antihistamines (Kim, 2019). awijaya awijaya Basophils are a type of white blood cells or leukocytes that differentiate tas Brawlaya awijaya and mature in the bone marrow and circulate in the peripheral blood (Metz et al., awijava awijaya 2008). Granulocytes are a group of leukocytes that are comprised of basophils, awijaya Universinophils and neutrophils. Basophils are mostly involved in the immune system it as Brawij awijava awijaya where they mediate hypersensitivity reactions. In the event of an infection, awijaya awijaya basophils migrate to the site of infection and release various mediators such as awijaya chemokines, cytokines and proteases (Augustyn et al., 2016). awijaya awijaya awijaya Universita Studies have shown that patients with atopic dermatitis have an increased it as Brawijaya awijaya spontaneous release of basophils. Patients with more severe atopic dermatitis awijava awijaya are known to have activated circulating basophils and an increased release of awijaya Un basophils (Redrup et al., 1998). Other than atopic dermatitis, basophils also tas Brawijava invade skin lesions in skin disorders like chronic idiopathic urticaria and allergic Universitas Brawijaya Universitas Brawijaya

Universitas Brawijaya awijaya Universita Vitamin D has the ability to suppress inflammatory responses and improvesitas Brawijava the integrity of the permeability barrier. As a result, it can be possible ́а Unmedication for various skin diseases, including atopic dermatitis. The presence of itas Brawlaya awijaya Vitamin D in human cause a reduction in the amount of circulating basophils awijaya (Searing and Leung, 2010). awijaya awijaya awijaya This observational study was conducted in order to determine the awijaya awijava Unirelationship between the amount of vitamin D in serum and the percentage of itas Brawijaya awijaya basophils in children who were diagnosed with atopic dermatitis in Saiful Anwar awiiava awijaya Hospital Malang. awijaya awijaya awijaya awijaya **1.2 Problem Statement** awijaya awijava 1.2.1 General Problem Statement awijaya awijaya Is there a correlation between the level of vitamin D in serum and the tas Brawiava awijaya awijaya percentage of basophils in children with atopic dermatitis in the paediatric awijaya awijaya department of Saiful Anwar Hospital? awijaya awijaya 1.2.2 Specific Problem Statements awijaya awijaya 1. How is the level of vitamin D in serum in children with atopic dermatitis in awijaya awijaya Universita the paediatric department of Saiful Anwar Hospital? awijaya 2. Does the percentage of basophils in children with atopic dermatitis in the Brawijaya awijaya awijaya paediatric department of Saiful Anwar Hospital vary in different Vitamin D Universitas Brawijaya Universita status?ijava

Universitas Brawijaya Univer 3. Is there a correlation between the level of Vitamin D in serum and the tas Brawijava percentage of basophils in children with atopic dermatitis in the paediatric Universita department of Saiful Anwar Hospital? a Universitas Brawijaya awijaya awijaya awijaya awijaya 1.3 Research Objectives awijaya awijaya 1.3.1 General Objective awijava awijaya The general objective of this study is to determine if there is a awiiava awijaya correlation between the vitamin D level in serum and the percentage of awijaya basophils in children with atopic dermatitis in the paediatric department of the Brawliava awijaya awijaya Saiful Anwar Hospital. awijaya awijaya 1.3.2 Specific Objectives awijava awijaya The specific objectives of this study are as follows: awijaya awijaya To determine the level of vitamin D in serum in children with atopic tas Brawi ava awijaya 1. awijaya dermatitis in the paediatric department of Saiful Anwar Hospital awijaya awijaya To determine the percentage of basophils in children with atopicsitas Brawijaya 2. awijaya dermatitis in the paediatric department of Saiful Anwar Hospital in the Brawline awijaya awijaya different Vitamin D status awijaya awijaya Univer 3. To prove that there is a correlation between the Vitamin D level in serum tas Brawlaya awijaya University and the percentage of basophils in children with atopic dermatitis in the Brawijaya awijaya paediatric department of Saiful Anwar Hospital awijaya Universitas Brawijaya Universitas Brawijaya ersitas Brawijaya

awijaya Universitas Brawijaya awijaya Univ1.4 Benefits of Research/ersitas Brawijaya Universitas Brawijaya Universitas Brawijaya The benefits that can be derived from this study involve both the academic ersitas Brawijava and clinical field. awijaya awijaya Academic Benefits: awijaya 1. To contribute to the knowledge in regards to the correlation between the awijaya awijaya Universita amount of Vitamin D in serum and the percentage of basophils in childrensitas Brawijaya awijaya awijava with atopic dermatitis. awijaya Universita To serve as a basis for further research on atopic dermatitis and its Brawijaya awijaya awijaya therapy. awijaya awijaya awijaya **Clinical Benefits:** awijaya 1. To contribute to the clinical information regarding vitamin D as a possible sitas Brawijaya awijaya awijaya therapy for atopic dermatitis. awijaya To serve as a basis for the development of the method used to evaluate awijaya 2. awijaya awijaya the prognosis of atopic dermatitis awijaya awijaya

Universitas Brawijaya awijaya Universitas CHAPTER 2 Universitas Brawijaya LITERATURE REVIEW awijaya awijaya awijaya 2.1 Atopic Dermatitis awiiava awijaya 2.1.1 Definition and Epidemiology awijaya awijava awijaya Universita Atopic dermatitis (AD) or commonly known as eczema is a chronic and itas Brawijaya awiiava In pruritic inflammatory skin disease. The word atopic is derived from the Greek as Brawiava awijaya awijaya which translates to "strange" and the word dermatitis means inflammation of the awijaya awijaya skin. According to the Japanese Dermatological Association, the definition of the Brawlaya awijaya atopic dermatitis is "a disease whose main lesion is itching eczema with recurrent awijaya remissions and exacerbations". It is a chronically relapsing illness caused by awijaya awijaya Uni multiple stimulative factors. AD usually begins in early infancy but is also found insides Brawijava awijaya awijaya a significant number of adults (Kim, 2019). awijaya awijaya One of the most common diseases that affect children and infants is as Brawijaya awijaya awijaya atopic dermatitis. The prevalence of AD as high as 20% in most countries and awijaya awijaya Unicontinues to increase. Approximately 30% of infants are afflicted with atopicates Brawijaya awijaya dermatitis and in adults, the prevalence of AD ranges from 1 to 3%. Atopic tas Brawlaya awijaya awijaya dermatitis in adults is more common in Asia than in western countries. Females awijaya awijaya are found to be slightly more susceptible to AD with a ratio of female: male ratio awijaya of 1.3:1. In Indonesia, the prevalence of atopic dermatitis is 1.1% in 13 to 14 year olds (Nutten, 2015). Some of the clinical manifestations of AD includes hyper pigmented skin Un especially around the eyes or dark spots on the skin, scaly and dry skin, cracked it as Brawijaya



Universitas Brawijaya In means that the pathogenesis of AD is contributed by both genetic and immunologic factors (Pengitas Brawijava and Novak, 2015). Patients with AD are known to have a mutation of the FLG (Filaggrin gene) which is responsible for the encoding of the protein (pro)-filaggrin, an awijaya Universitas Brawijaya Un important protein in the epidermis. Genetic defect in FLG disrupts the epidermis it as Brawn awijaya awijaya and results in contact between the immune cells in the dermis and antigens in the awijaya awijaya external environment. Scratching causes epidermal inflammation and is known tas Brawlaya awijaya as the 'itch scratch cycle'. This results in itchiness and scratching will lead to awijava awijaya inflammation. (Pandaleke, 2014). awiiava awijaya University The damaged skin barrier causes migration of activated antigen-sitas Brawijaya awijaya presenting cells into the lymph glands and migration from naive T cells to T awijaya awijaya helper 2 cells (Th2). Increased Th2 cytokines and Tumour Necrosis Factor  $\boldsymbol{\alpha}$ awijaya Un  $(TNF-\alpha)$  along with IFN-y is the reason for further damage of the skin barrier it as Brawn awijaya awijaya since it causes keratinocyte apoptosis induction. This impairs the tight junction awijava awijaya Un function and increases the response of Th2 by raising the thymic stromal it as Brawijaya awijaya lymphopoetin (TLSP) expression from epithelial cells (Peng and Novak, 2015). awijaya awijaya AD can also occur in patients with defective innate immunity that results in awijaya awijava Unisusceptibility to viral and bacterial infections. Initially, the T cell response will be it as Brawn awijaya dominated by Th2. Eventually, a shift in a Th1 dominant response will lead to the awijaya release of cytokines and pro-inflammatory chemokines known as interleukin (IL) awijaya awijava 4, IL 5 and TNF which will stimulate the production of IgE and a systemic tas Brawlava inflammatory response. This series of events will produce the awijaya clinical awijaya manifestations of AD such as pruritus (Pandaleke, 2014). as Brawijaya It is also worth noting that environmental and pharmacologic factors as well as microbial exposure could be considered responsible in the development tas Braw of atopic dermatitis. For instance, dust mites and pollen are known to be able to

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awijaya	Un trigger an eczema flare up. AD is also a common occurrence in peo	
awijaya	easily react towards chemicals or irritants such as cleaning products lik	Universitas Brawijaya
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awijaya	Uni and detergents (Jones, 2018) itas Brawijaya Universitas Brawijaya	Universitas Brawijaya
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awijaya	Atopic dermatitis can be diagnosed with clinical manifestations p	Universitas Brawijaya
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awijaya	Uniby patients. While there are several factors that should be ta	kemiintositas Brawijaya
awijaya	Universitas Brawije s Brawijaya	Universitas Brawijaya
awijaya	consideration such as a family history of AD, environmental condition	ons and sitas Brawijaya
awijaya	Uni specific triggers (Kim <i>et al.,</i> 2016).	Universitas Brawijaya
awijaya	Universit	Universitas Brawijaya
awijaya	Univer 1. Patient must have three or more of the following major criteria:	Universitas Brawijaya
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awijaya	Uni i) Pruritus	hiversitas Brawijaya
awijaya	Uni C C C C C C C C C C C C C C C C C C C	niversitas Brawijaya
awijaya	ii) Dermatitis affecting flexural surfaces in adults and the f	ace landsitas Brawijaya
awijaya	Unit extensors in infants	hiversitas Brawijaya
awijaya	Univ	niversitas Brawijaya
awijaya	Universiti) Chronic or relapsing dermatitis	Iniversitas Brawijaya
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awijaya	iv) Personal or family history of cutaneous or respiratory atopy	Universitas Brawijaya
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awijaya	2. Patient must have at least three of the following minor criteria:	Universitas Brawijaya
awijaya	Universities Features of the so-called "atopic facies": facial pallor or e	
awijaya	Universitas	Universitas Brawijava
awijaya	Universitas B hypo pigmented patches, infraorbital darkening, infraorbital	
awijaya	Universitas Braw	Universitas Brawijava
awijaya	Universitas B wrinkles, cheilitis, recurrent conjunctivitis and anterior neck fol	<sup>ds</sup> iniversitas Brawijaya
awijaya	Universitial B Trigger of atopic dermatitis: food emotional factor enviro	Iniversitas Brawijaya
awijaya	ii) Trigger of atopic dermatitis: food, emotional factor, enviro	Universitas Brawijaya
awijaya	Universitas B factors and skin irritants like wool, solvents and sweat wijaya	Universitas Brawijaya
awijaya	Universitas Brawijaya Universitas Brawijaya Universitas Brawijaya	Universitas Brawijaya
awijaya	iii) Complications of atopic dermatitis such as susceptibility to c	utaneous Brawijaya
awijaya	Universities B viral and bacterial infections, impaired cell-mediated in	
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Universitas Brawijaya Universitas Bimmediate skin-test reactivity, raised serum IgE, keratoconus and tas Brawijava anterior sub capsular cataracts. University) S B Others: early age of onset, dry skin, ichthyosis, hyper linear palms, stas Brawlaya awijaya where the second awijaya and foot dermatitis, nipple eczema, white dermatographism and awijaya awijaya iava Universitas Brawijava Universitas B perifollicular accentuation awijaya awijaya awijava 2.1.4 Assessment of AD Activity awijaya Universita The best validated scoring system for Atopic Dermatitis is SCORAD. awiiava awijaya Uni SCORAD (Score of Atopic Dermatitis) is a clinical tool used to assess the extent it as Brawijava awijaya awijaya and severity of AD. It is used before and after treatment to test the effectiveness awijaya awijaya of the treatment. The interpretation of SCORAD is done based on three it as Brawijaya awijaya un categories, which are the areas affected, the intensity of the signs and the same Brawlaya awijava awijaya subjective symptoms experienced (Chopra et al., 2017). awijaya awijaya The areas affected are assessed using the rule of 9 by calculating the awijaya awijaya Unipercentages of different parts of the body. 9% for the head and neck, 9% and itas Brawijaya awijaya 18% for each upper and lower limb, 18% for the anterior trunk and back as well awijaya awijaya as 1% for the genitals. The total area is 'A' which has a possible maximum of awijaya awijaya Uni 100%. The intensity of the signs are examined based on six criteria which are it as Brawijaya awijaya erythema (redness), papulation or oedema (swelling), oozing or crusting, awijava awijaya excoriation (scratching), lichenification (leathery) and dryness (ichthyosis). The **Universitas Brawi** awijaya un score ranges from 0-3 which translates to absent, mild, moderate or severe. The tas Brawijava awijaya total scores are added to give 'B' a maximum of 18 points. The subjective symptoms such as pruritus or sleeplessness can be scored from 0 to 10 where 0 tas Brawijaya

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Uni indicates absence of symptoms and 10 indicates the worst imaginable condition sitas Brawijava The scores are added to give 'C' with a maximum of 20 points (Hanifin, 2018). The SCORAD assessment for atopic dermatitis is divided into the Brawlaya following: Universitas Prawijaya Universitas Brawijaya Universitas Brawiiava - Mild: <15 score BRAWIJ - Moderate: 15-40 score Severe: >40 score 2.1.5 Management Non-pharmacologic measures for atopic dermatitis are just as critical as a Brawlava pharmacologic treatments. The most important of which is identifying and the Brawing and

awijaya awijaya Univeliminating factors that cause atopic dermatitis. Some of the factors that trigger it as Brawijaya awijaya Uni AD are allergens such as dust mites, animal dander and pollen, foods like milk, sitas Brawijava awijaya awijaya eggs, nuts and fish as well as environmental conditions including extreme awijaya awijaya Un temperatures, seasonal changes, humidity and smoke. Patients should steer tas Brawlaya awijaya clear of irritants which encompass soaps, detergents, creams and topical Brawlava awijaya awijaya medications. Certain materials worn on the skin such as wool and synthetic awijaya awijaya In fabrics can also provoke the outbreak of eczema. Other factors include hormonal itas Brawijaya awijaya changes in women, especially during pregnancy or menstruation and infections Brawijaya awijaya caused by bacteria and virus (Chen *et al.*, 2007). awijaya Universitas Brawijaya Universitas Brawijaya It is crucial for patients with atopic dermatitis to add elements of hydration and moisture to the skin. Hydrating the skin is needed to remove scales, crusts, it as Brawlaya irritants and allergens. Moisturizers on the other hand, are useful to stop xerosis tas Brawijaya awijaya

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Universitas Brawijaya awijaya (dry skin) and trans-epidermal dehydration while reducing the severity of the tas Brawiava disease. Patients with AD should shower or bath regularly and moisturise immediately. Steroid cream or ointment should be applied to red or itchy areas it as Brawlaya awijaya while moisturisers should be applied on other parts of the body. Wet compresses awijaya awijaya would be useful to control itching during the night (Shwartz, 2019). awijaya awijaya Pharmacologic therapy for AD includes topical corticosteroids such as awijaya awijava Un Hydrocortisone, Triamcinolone and Flurandrenolide. Systemic corticosteroids like tas Brawlaya awijaya Prednisone as well as Tacrolimus and immunomodulatory drugs like awiiava awijaya Pimecrolimus can be used too. Antihistamines such as Diphenhydramine, awijaya awijaya Un Hydroxyzine, Doxepin and Pramoxine may help relieve itching caused by AD. Itas Brawijaya awijaya Patients may also be prescribed with antimicrobials like Mupirocin, Erythromycin, awijaya awijaya Oxacillin, Amoxicillin, Acyclovir and Ketoconazole to treat infections (Kim et al., Marcinet and Ketoconazole to treat infections) awijava Uni 2016). awijava awijaya awijaya awijaya awijaya 2.2 Basophils awijaya awijaya 2.2.1 Basophils and their functions awijaya awijaya Basophils were discovered in 1897 by Paul Ehrlich. They are myeloid cells awijaya awijaya Which are also the least common granulocytes that are found in the blood (Obatasitas Brawijaya awijava et al., 2019). Granulocytes are a group of white blood cells formed by basophils, and Brawing a awijaya awijaya eosinophils and neutrophils. Basophils have large, purplish black cytoplasmic awijaya granules that conceal the underlying double-lobed nucleus. They are formed in itas Brawijava the bone marrow and are released into the peripheral blood where they circulate. From the circulation, basophils migrate to tissues to synthesize and store an tas Brawijaya inflammatory modulator called histamine (Borriello et al., 2014). awijava

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awijaya Universitas Brawijaya awijaya Uni 2.2.2 Basophils in Atopic Dermatitis wijaya Universitas Brawijaya Universitaln B the levent of vaniallergic reaction, basophils infiltrate into the tas Brawijaya inflammatory sites. This is not only true in atopic dermatitis, but also in other awijaya Conditions such as asthma and allergic rhinitis. The accumulation of basophils as Brawlaya awijaya awijaya and mast cells can be seen in allergic reactions. Their migration, differentiations tas Brawijava awijaya awijaya and activation are needed for inflammatory responses (Metz et al., 2008). awijaya awijaya Basophils play a significant role in allergic diseases as they aid in the awijaya awijaya Unisecretion of various mediators, such as cytokines, chemokines and proteases. Stas Brawijava awijaya Uni The activation of basophils is responsible for the release of histamine, IL- and IL-sitas Brawijaya awijaya awijaya 13 (Marone et al., 2000). Studies show that skin lesions of patients who have awijaya been diagnosed with AD are enriched with basophils. On the other hand, no it as Brawijaya awijaya awijaya basophils were found in the healthy control group (Siracusa et al., 2013). awijaya awijaya

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SOLAR UVB RADIATION Vitamin D<sub>3</sub> ;hylomicrons Diet PreD, 7-DHC skin Heat Vitamin D<sub>2</sub> Vitamin D ł Maintains Normal Cell Proliferation 25-OHase VDR Liver 1,25(OH)2D 25(OH)D 5(OH),D Macrophage 1-OHase Lipogenesis Z Preosteoclast 1,25(OH)2D 3 VDR RANK 25(OH)<sub>2</sub>D Kidneys Osteoblast Adipocyte 🌔 тн Osteoclas Intestine Parathyroid Glands HPO42-Ca2+ HPO42

Univ2.3.1 Metabolism of Vitamin Das Brawijaya Universitas Brawijaya

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#### Figure 2.2: The metabolism of vitamin D (Holick, 2009)

Blood

Calcium hosphoru

When exposed to sunlight, 7-dihydrocholesterol (7-DHC) is photolyzed to previtamin D3 tas Brawijaya (preD3). PreD3 is converted to vitamin D3 by body heat. Vitamin D produced in the skin together with Vitamin D2 and Vitamin D3 enter the circulation and are either stored in the body's adipocytes Unifor enter the liver to be converted to 25-hydroxyvitamin D [25 (OH) D]. For calcium metabolism, 25 Itas Brawijaya (OH) D is converted in the kidneys to 1.25-dihydroxyvitamin D [1.25 (OH) 2 D] which interacts with the Brawlin and its vitamin D receptor (VDR) in the small intestines and on osteoblasts for calcium regulation and Uniphosphorus metabolism. 25 (OH) D is metabolized in various tissues and cells for the regulation of the Brawlaya D is induced in the macrophage and is controlled by the 2/1 toll-like receptors (TLR) and its interaction with lipopolysaccharide (LPS). Circulating concentrations of 1.25 (OH) 2 D helps to LAS Brawijaya increase the production of insulin and decrease the production of renin as well as alter adipocyte it as Brawijava lipogenesis (Holick, 2009). Universita The majority of Vitamin D for humans are sourced from animal-based food it as Brawijava products such as fish, eggs, milk and beef liver as well as solar ultraviolet B. Univitamin D that is produced in the skin or ingested is hydroxylated in the liver to it as Brawijaya Un form 25-hydroxycholecalciferol or 25(OH) D, also known as calcifediol. This is Brawiava

Universitas Brawijaya awijaya In reaction is catalysed by vitamin D 25-hydroxylase which is the product of the tas Brawijava CYP2R1 human gene. The product is released into the plasma where it is bound to vitamin D-binding protein. Calcifediol is transported to the kidneys and tas Brawlaya awijaya hydroxylated to form calcitriol (1.25 dihydroxycholecalciferol, 1.25 (OH) 2D). This awijaya awijaya process is catalysed by the enzyme 25-hydroxyvitamin D<sub>3</sub> 1-alpha-hydroxylase, awijaya Universitas Brawi Un which is the product of CYP27B1 human gene. Parathyroid hormone and low it as Brawijava awijaya awijaya levels of calcium or phosphate can increase the activity of CYP27B1 (Holick, awijava awijaya 2009). awiiava awijaya After finally being converted in the kidney, calcitriol is released into the awijaya awijaya Unicirculation, throughout the body including to target organs of intestine, kidney and itas Brawijaya awijaya bone by binding to vitamin D-binding protein. Calcitriol is responsible for the binding bone by binding to vitamin D-binding protein. awijaya awijaya mediating most of the physiological actions of vitamin D. It is also synthesized by awijaya ersitas Brawijaya awijaya Uniother cells including monocyte-macrophages in the immune system where it acts it as Brawijava awijaya locally as a cytokine to modulate body defences against microbes by stimulating awijaya awijaya the innate immune system (Holick, 2009). awijaya awijaya 2.3.2 Vitamin D Deficiency awijaya awijaya Vitamin D deficiency is defined as 25 (OH) D <20 ng/mL while Vitamin D awijaya awijaya Un insufficiency is 25 (OH) D 20-30 ng/mL. Finally, Vitamin D sufficiency is it as Brawlaya awijaya confirmed when 25 (OH) D >30 ng/mL (Tangpricha, 2019). awijava awijaya Universita Some of the factors that influence Vitamin D deficiency are sunlight tas Brawijava awijaya awijaya exposure, dietary habits, old age, body weight and BMI as well as reduced production of Vitamin D in the skin. There are specific diseases that result in low tas Brawlaya Vitamin D levels such as renal diseases and gastrointestinal disorders (Harbolic, Brawiava Universitas Brawijaya 2019). Universitas Brawijaya

Universitas Brawijaya awijaya Uni 2.4 Vitamin D and Atopic Dermatitisawijaya Universitas Brawijaya Universita Vitamin D plays a crucial role in both adaptive and innate immunity.sitas Brawijaya Recently, vitamin D receptors (VDR) were discovered and detected in many awijaya awijaya tissues and cells in humans including almost all immune cells such as B cells. Tailas Brawlava awijaya un cells, dendritic cells, neutrophils and macrophages. In innate immunity, Vitamin Datas Brawijava awijaya awijaya induces antimicrobial peptide synthesis but inhibits the expression of TLR (Tollawijaya awijaya Un like receptor) and the pro-inflammatory cytokine production. In adaptive immunity, sites Brawlaya awijaya Vitamin D causes the reduction of Th-1 cytokine production and inhibition of T awijaya awijaya cell proliferation (Hoxha, 2014). awijaya awijaya Vitamin D is known to be able to suppress inflammatory responses and awijaya awijaya improve the integrity of the permeability barrier which allows it to be a possible stas Brawijaya awijaya therapeutic intervention for various skin diseases, including atopic dermatitis as Brawlaya awijaya awijaya (Searing and Leung, 2010). awijaya awijaya

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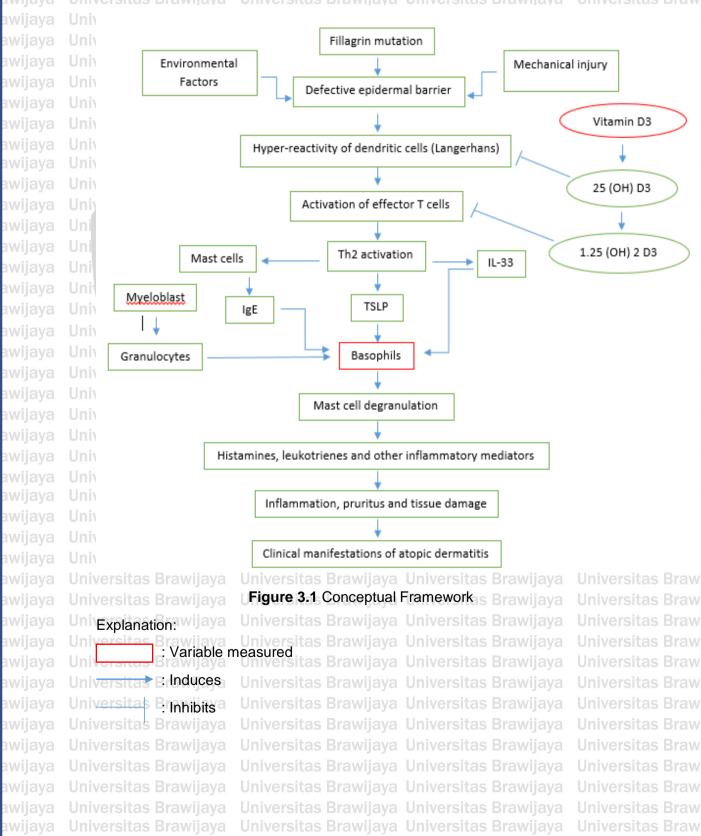
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Universitas Brawijaya awijaya University Based on the conceptual framework, the pathogenesis of atopic tas Brawijava dermatitis is initiated by a defective epidermal barrier caused by mechanical injuries, environmental factors or fillagrin mutation. This results in the hyper- tas Brawlaya awijaya reactivity of dendritic or Langerhans cells. Effector T cells are activated and awijaya subsequently Th2 activation occurs. With that, IgE formed by mast cells together awijaya awijaya Universitas Brawijava Universita Universitas Brawijaya Universitas Brawij Uni with IL-33 and TSLP regulate basophils. Basophils cause degranulation of mast it as Brawijava awijaya awijaya cells to produce histamine, leukotrienes and other inflammatory mediators. As a awijava awijaya Universult, inflammation, pruritus and tissue damage may occur followed by other it as Brawijaya awiiava Un clinical manifestations of atopic dermatitis (Peng and Novak, 2015). awijaya awijaya awijaya 1.25 (OH) 2 D3 is an active metabolite of vitamin D which plays an it as Brawijaya awijaya important role in the immune system regulation. It has the ability to inhibit the awijaya awijaya hyper reactivity of dendritic cells and the activation of effector T cells. This affects awijaya Un the mast cells and granulocytes produced which suppresses basophils in the tas Brawijava awijava awijaya body. As a consequence, vitamin D reduces the clinical manifestations of atopic awijaya awijaya Un dermatitis as well as improving the quality of lives of patients with atopic tas Brawijaya awijaya dermatitis (Hoxha, 2014). awijaya awijaya awijaya awijaya awijaya 3.2 Hypothesis awijaya awijava Univers1. The level of vitamin D in serum in children with atopic dermatitis in the itas Brawijaya awijaya Universita paediatric department of Saiful Anwar Hospital is lower than the normal tas Brawijava awijaya awijaya range Univer 2. The percentage of basophils in children with atopic dermatitis in the tas Brawlaya paediatric department of Saiful Anwar Hospital is higher in patients with Brawijaya Universita Vitamin D deficiency

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awijaya awijaya awijaya Univer 3. There is a negative correlation between the Vitamin D level in serum and itas Brawijava the percentage of basophils in children with atopic dermatitis in the awijaya Universita paediatric department of Saiful Anwar Hospital Sitas Brawijaya awijaya awijaya awijaya awijaya awijaya awijaya awijaya awijaya MERE awijaya awijaya

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Universitas Brawijaya awijaya UniversitasCHAPTER 4 Universitas Brawijaya awijaya UniverRESEARCH METHOD ersitas Brawijava 4.1 Research Design Universitas Brawijaya Universitas Brawijaya awijaya awijaya The design of this research was analytic observational with a cross-stas Brawijaya awijaya awijaya sectional approach. The variable observation on the research subjects and the awijaya awijaya Unidata retrieval were carried out simultaneously. awijava awijaya 4.2 Research Population and Subjects awiiava The population of this research was all children at the Polyclinic of awijaya awijaya Uni Immunologic Allergy at the Paediatric department of Saiful Anwar Hospital insites Brawijava awijaya awijaya Malang. Whereas the subject of this research was children who were diagnosed awijaya awijaya with at the Polyclinic of Immunologic Allergy at the Paediatric department of Itas Brawlaya awijaya Saiful Anwar Hospital in Malang. Research subjects were gathered using the Brawlava awijaya awijaya consecutive sampling technique. awijaya awijaya The inclusion criteria for the research subjects include: awijaya awijaya Children of the age of 0-10 years that have been diagnosed with AD by a Brawlaya awijaya awijaya paediatrician awijaya awijaya University Must not have consumed vitamin D in the past 6 months will avai awijaya Parents of patients must be willing to allow their children to participate in awijava awijaya the research and sign the informed consent awijaya awijaya The exclusion criteria for the research subjects include: Patients with Atopic Dermatitis and secondary infection Universita Patients with severe infections, congenital heart diseases, autoimmune it as Brawijaya Universita diseases and malignancy Brawijaya Universitas Brawijaya

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awiiava awijaya awiiava awijaya awijaya awijaya awijaya awijaya Uni 4.3 Sample Size va awijaya awijaya Universital For cross-sectional research with numeric variables, the formula for itas Brawijaya awijaya calculating the number of samples was as follows (Dahlan, 2011): awijaya awijaya Universitan =  $(Z\alpha) 2 \times p \times (1-p)$ awijaya awijaya BRANIJA Universitas Brawii d 2 awijava awijaya awijaya Universitan = (1.96) 2 x 0.03 x 0.97 awijaya Universit awijaya 0.01 awijaya awijaya n = 11.17 awijaya awijaya Note, awijaya awijaya n = number of minimal samples awijaya awijaya  $\alpha$  = significant values, the significant value used in this research was 0.05 tas Brawlava awijaya awijaya and an interval confident of 95%, until  $Z\alpha = 1.96$ awijaya awijaya p = the proportion of dependent and independent variable in the previous awijaya awijaya research (0.03) awijaya awijaya d =the acceptable degree of error (0.1) awijaya Based on the formula, a minimum of 11 samples were required for each awijaya awijaya awijaya University as Brawijaya awijaya awijaya

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Univojsitas Brawijaya Uni 4.4 Research Variables iversitas Brawijaya Universitas Brawijaya Univ4.4.1 Independent Variables itas Brawijaya Universitas Brawijaya The independent variable in this research was the level of Vitamin D (25 (OH) D) sites Brawlaya awijaya awijaya Universitas Brawijaya Universitas Brawijaya awijaya awijaya awijaya The dependent variable in this research was the percentage of basophils awijaya awijava 4.5 Operational Definition awijaya awiiava 4.5.1 Atopic Dermatitis awijaya awijaya Atopic dermatitis is a chronic inflammatory skin disease. It can be tas Brawijaya awijaya awijaya diagnosed based on several clinical criteria (Tada, 2002): awijaya awijaya Pruritus with scars of scratching awijaya awijaya With 3 or more of the following clinical manifestations: awijaya Eczema on skin folds (cheeks, forehead and other parts of the tas Brawijaya awijava awijaya body for children under the age of 4 years awijaya awijaya Lesions on the folds of the elbow, knee, ankle and around the itas Brawijaya awijaya neck including the cheeks for children under the age of 10 years gravitas Bravijaya awijaya awijaya A history of atopy such as asthma or hay fever awijaya Universitas Braw Dry skin that was widely spread awijaya awijava Universitas Bew Affects children below the age of 2 iversitas Brawijava awijaya awijaya awijaya Uni 4.5.2 Vitamin D Level Universitas Brawijaya Universitas Brawijaya The level of vitamin D measured was 25 (OH) D, which is the active form Uni of vitamin D and the most dominant component in serum. The measurement was it as Brawijaya

Universitas Brawijaya awijaya Uni done using the Enzyme-linked Immunosorbent Assays (ELISA) method. Acitas Brawijava concentration of below 20 ng/mL indicates vitamin D deficiency (Harrington, 2018). Vitamin D insufficiency is when 25 (OH) D falls in the range of 20-30 tas Brawlava awijaya ng/mL. Vitamin D sufficiency is defined as 25 (OH) D >30 ng/mL (Tangpricha, Brawlava awijaya awijaya Universitas Brawijaya awijaya In this research, the subjects were separated into three groups. There awijaya awijaya awijava Uniwas one group with sufficient level of vitamin D, one with Vitamin D deficiency it as Brawlaya awijaya and the remaining group with vitamin D deficiency and insufficiency. awiiava awijaya Uni 4.5.3 Percentage of Basophils awijaya awijaya awijaya The normal percentage of basophils ranges from 0.5 to 1.0% (Nall, 2018). It as Brawijaya awijaya Though a low percentage of basophils do not provide any reason for concern, the Brawlava awijaya increased basophils indicate an active allergic response. Basophils were awijaya awijaya measured by automated calculation using Hematology Analyzer (Curry et al., tas Brawiava awijaya awijaya 2019). awijaya awijaya awijaya awijaya 4.6 Research Tools and Materials awijaya awijaya awijaya Universitaa. Patient identity data awijaya Universitab. Form of Atopic Dermatitis patient and universitas Brawijaya awijava awijaya Universitac. Tools and materials for blood sampling: niversitas Brawijaya Universitas Brawijaya Universitas Brawijaya Universitas Brawijaya awijaya awijaya - Vacutainer filled with EDTA Brawijaya Universitas Brawijaya - Tourniquet Universitas 70% alcohol swab ersitas Brawijaya Universitas Brawijaya

awijaya awijaya Universita-5 cc syringe awijaya Universita-Ice pack ya awijaya Universitas Cool box va awijaya awijaya Universitas Sterile gloves Universitas Brawijaya Universitas Brawijaya awijaya awijaya Universitas Brawijaya awijaya awijaya awijaya - Human ELISA kit 25(OH) D3 awijaya awijaya - ELISA reader awijaya awijaya - Centrifuge awijaya awijaya awijaya - Micropipette awijaya awijaya - Blue tip awijaya awijaya - Yellow tip awijaya awijaya - PBS awijaya awijaya - Aquadest awijaya awijaya awijaya awijaya 4.7 Research Procedure awijaya awijaya awijaya awijaya awijaya awijaya

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d. Tools and materials for Vitamin D level measurement:

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Universita 4.7.1 Blood Sampling itas Brawijaya Universitas Brawijaya

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Universita The blood sampling was conducted in the laboratory of the Pathology it as Brawijaya Clinic of Saiful Anwar Hospital by the laboratory staff. The blood sample of 5 cc

was obtained from the median cubital vein for each subject. Universitas Brawijava Univorsitas Brawijaya



Universitas Brawijaya awijaya Universit The procedure began with washing hands with soap and water and then it as Brawijava confirming the patient identity. After applying the tourniquet, the vein was un palpated and the tourniquet was released. Sterile gloves were used and the area it as Brawijaya awijaya was wiped with 70% alcohol swab. The tourniquet was reapplied 3 - 4 inches awijaya awijaya above the puncture site, the needle was inserted at a 30° angle. After the awijaya Universitas Brawijaya ava Universitas Brawijaya Universitas Brawij specimen was collected, the tourniquet and the needle were removed. Direct awijaya awijaya pressure was applied at puncture site to stop bleeding. The specimens were awijava awijaya mixed by inverting the tube 4 - 8 times. The sample was labelled and sent for itas Brawijaya awiiava h1. Unitests: awijaya awijaya awijaya Uni 4.7.2 Sample Management awijaya awijaya The collected blood sample was divided into two parts, 2 ml for complete it as Brawijaya awijaya blood count and 3 ml to be made into serum via centrifugation at 3000 rpm for 5 tas Brawijaya awijava awijaya minutes and then stored at 4°C. awijaya awijaya 4.7.3 Measurement of 25(OH) D3 awijaya awijaya The measurement of 25 (OH) D3 was conducted using the Enzyme-linked awijaya awijaya Immunosorbent Assays (ELISA) method in ng/mL. In the first incubation step, the Itas Brawijaya awijaya Unisample was added to the solid phase along with the calibrator and the control. Insitas Brawijava awijaya awijaya this mix, the vitamin D binding protein (VDBP) and the VDBP-antibody were also awijaya awijaya added. 25 (OH) D in the sample competed with the tracer which allowed the awijaya VDBP antibody to be bound to the vitamin binding protein. The increased as Brawlava awijaya awijaya concentrations of 25 (OH) D in the sample resulted the reduction of the amount of binding protein which was immobilized to the well via the tracer. Around this time, the Brawlaya a washing step was employed to eliminate compounds that were unbound. Using incubation, the quantification of VDBP was achieved with a host specific

awijaya Universitas Brawijaya awijaya Un peroxidase labelled antibody which utilised a TMB in place of an enzymesitas Brawijaya awijaya substrate. To end this reaction, an acidic stopping solution was added and the Unicolour turns yellow. There was an indirect proportion between intensity of the itas Brawijaya awijaya yellow colour and the 25 (OH) D concentration in the sample. awijaya awijaya Uni 4.7.4 Measurement of Basophil percentage Universitas Brawijava awijaya awijaya UniversitaThe measurement of basophil percentage was done using the tas Brawijaya awijaya awijaya Hematology Analyzer. A capillary tube was filled with blood. The specimen was awijaya awijaya Univallowed to flow down the tube until it was the dry end, inserted vertically into the stas Brawijaya awijaya Unisealant and pushed to the bottom of the tray. The tube was twisted when it as Brawijaya awijaya awijaya removing from the sealant to prevent the sealing plug from being extracted. The awijaya awijaya sealed end of the tube was gently tapped on a flat surface and the capillary tubesitias Brawijaya awijaya was wiped off. It was then placed carefully in the centrifuge tube holder with the season and a se awijaya awijaya sealant end down. The tube was not forced but slid into the tube holder. All the awijaya Unitube positions were numbered on the rotor and used to record the position of itas Brawijaya awijaya awijaya each specimen. With the tube holders and tubes in place, the lid was locked awijaya awijaya firmly and the specimen was centrifuged.

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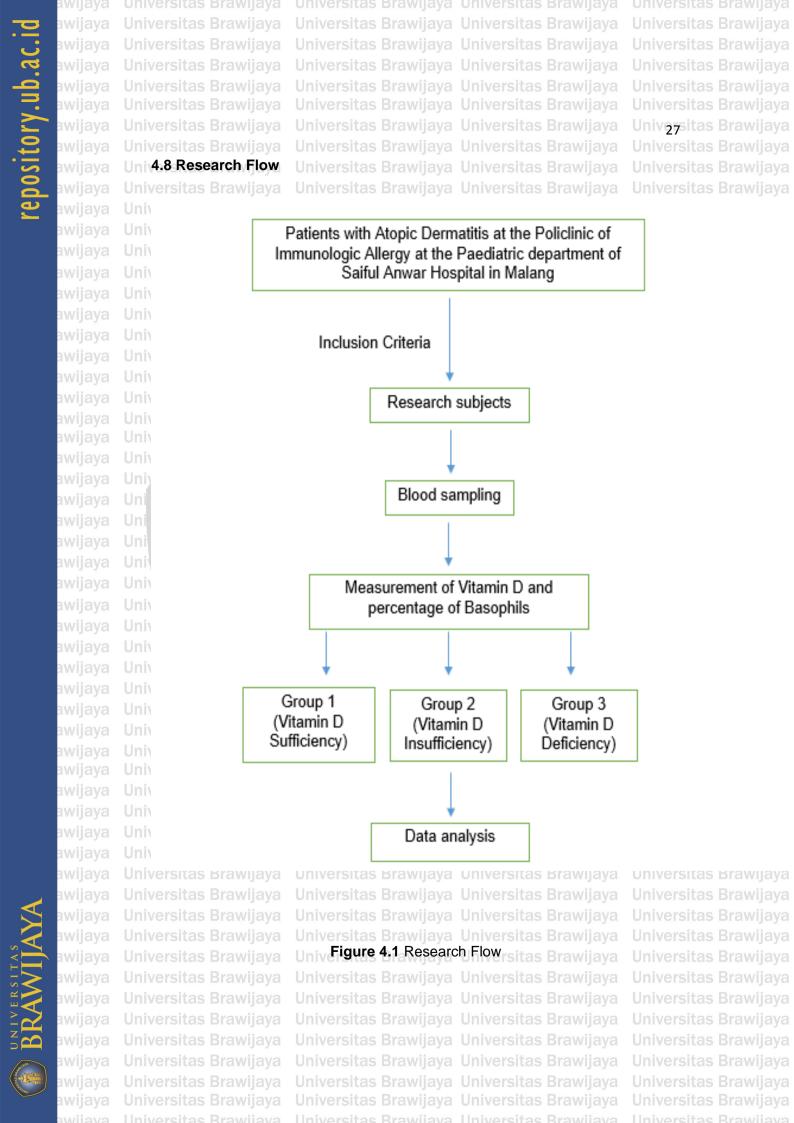
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awijaya Universitas Brawijaya awijaya Un 4.9 Data Analysis awijaya UniversitaThe data on subject characteristics will be displayed in tabulated form withsitas Brawijaya awijaya percentage. The statistical analysis between the two groups was done with oneawijaya way Anova test when there was a normal data distribution. For data that is not tas Brawlaya awijaya awijaya In normally distribution, the Mann-Whitney test should be conducted. For tas Brawijava awijaya awijaya categorical data, a Chi-Square test should be done. In order to determine the awijaya awijaya Unirelationship between variables, the Pearson correlation test was used when the itas Brawlaya awijaya data was normally distributed and the Spearman test when the data is not awijaya awijaya normally distributed. The statistical analysis was valid when  $p \le 0.05$ . All awijaya Uni calculations were done using the 23.0 version SPSS software for Windows. niversitas Brawijaya awijaya awijaya

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Universitas Brawijaya Universitas CHAPTER 5 Universitas Brawijava **RESEARCH RESULTS AND DATA ANALYSIS** awijaya 5.1 The Characteristics of the Research Subjects awijaya awijaya Universita The aim of this study to determine the correlation between Vitamin Datas Brawijava awiiava awijaya levels and the percentage of Basophils in children with atopic dermatitis. In order awijaya awijaya Un to gather the information necessary, the blood samples of said children were tas Brawl awijaya collected via blood sampling and tested to measure the values required for this awiiava awijaya research. The data gathered was then analysed using various methods. awijaya awijaya A total of 12 patients with Atopic Dermatitis were studied in this research. awijaya awijaya The subjects were made up of seven females and five males. The average age of the seven females and five males. awijaya the patients are 6 ± 2.96 months. The values obtained from the patients were the awijava awijava amount of Haemoglobins (measured in g/dL), Haematocrits (measured in awijaya Unipercentage), Leukocytes (measured in / µL), Thrombocytes (measured in / µL), it as Brawi awijava awijaya Basophils (measured in percentage), Absolute Basophils (measured in 10^3/µL) awijaya awijaya and Vitamin D 25 (OH) (measured in ng/mL). awijaya awijaya The basic features of data in a study can be depicted via descriptive awijaya awijaya Unistatistics. Descriptive analysis is the crucial first step that is used for carrying out it as Brawijaya awijaya statistical analysis. It helps to determine the distribution of the data collected awijava awijaya which can be useful to detect many variables such as outliers. The calculations awijaya Universitas Brawijaya Universitas Brawijaya and data analysis for this research were done using the SPSS software for the Brawlava Windows version 23. A descriptive analysis for this research contains various values such as, sex, age, Basophils and Vitamin D levels. The subjects were comprised of 5

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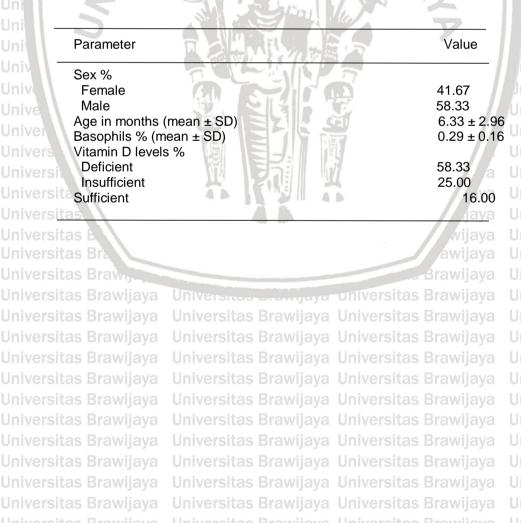
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awijaya Universitas Brawijaya awijaya Uni females and 7 males. The age of the subjects ranges from two to 12 months. The itas Brawijava mean age in months is 6.33. The amount of Basophils in the patients were measured in percentage. The average value of the Basophil percentage is the Brawlaya awijaya 0.29%. In addition to that, the value of Absolute Basophils were also measured. awijaya awijaya Universita The mean value for Vitamin D was 19.15 ng/mL. The amount of Vitamin D tas Brawijava awijaya awijaya measured enabled the subjects to be divided into three categories, which are awijaya awijaya Univinsufficiency, deficiency and sufficiency. Out of the 12 subjects that were studied, sites Brawliaya awijaya the level of Vitamin D was deficient in seven people. Three people have a awijaya awijaya Vitamin D insufficiency while two people have sufficient amount of Vitamin D. awijaya awijaya Table 5.1 The Demographic Data and Clinical Data of Subjects awijaya



5.2 Vitamin D and Basophil in Research Subjects Brawijava Universita The test of normality was done using the Saphiro-Wilk test to determine ifsitas Brawijava awijaya awijaya there was a normal distribution of data. The value of the normality test is deemed awijaya awijaya significant if  $p \ge 0.05$ . Since p = 0.2, the result of the normality test provided a last Brawlaya awijaya normal distribution of data. The criteria for a significant value from the season and s awijaya awijaya homogeneity test is that  $p \ge 0.05$ . In this study, p = 0.37. Therefore, the test of awijaya Uni homogeneity provided a homogenous range of data. awiiava awijaya awijaya The numeric data collected was analysed using a statistical method, sitas Brawijaya awijaya known as the Analysis of Variance (Anova) test. It is useful to access the Brawlava awijaya awijaya differences between two or more groups. The value obtained from the one-way awijaya awijaya Un Anova test is significant if p ≤ 0.05. In this research, the Anova test showed as tas Brawijaya awijaya significant difference between the sufficient, insufficient and deficient groups, awijaya awijaya where the value of p was 0.033. The Post Hoc test was conducted in order to awijaya Un confirm the difference between groups. There was a significant difference tas Brawliava awijaya awijaya between the deficient and insufficient group as well as the insufficient and awijaya awijaya Uni deficient group since the value of p ≤ 0.05. However, the difference between the itas Brawijaya awijaya sufficient and insufficient group as well as the deficient and insufficient group tas Brawijava awijaya awijaya were not significant since the value of p >0.05. awijava awijaya awijaya awijaya Universitas Bravijava Universitas Bravijava

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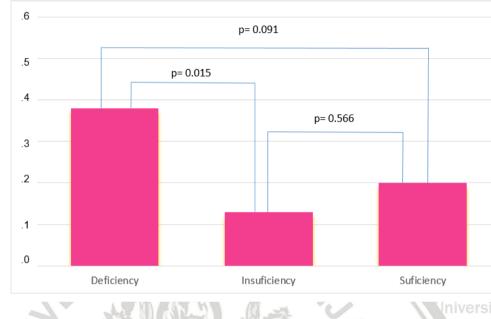
Basophil

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Vitamin D Levels

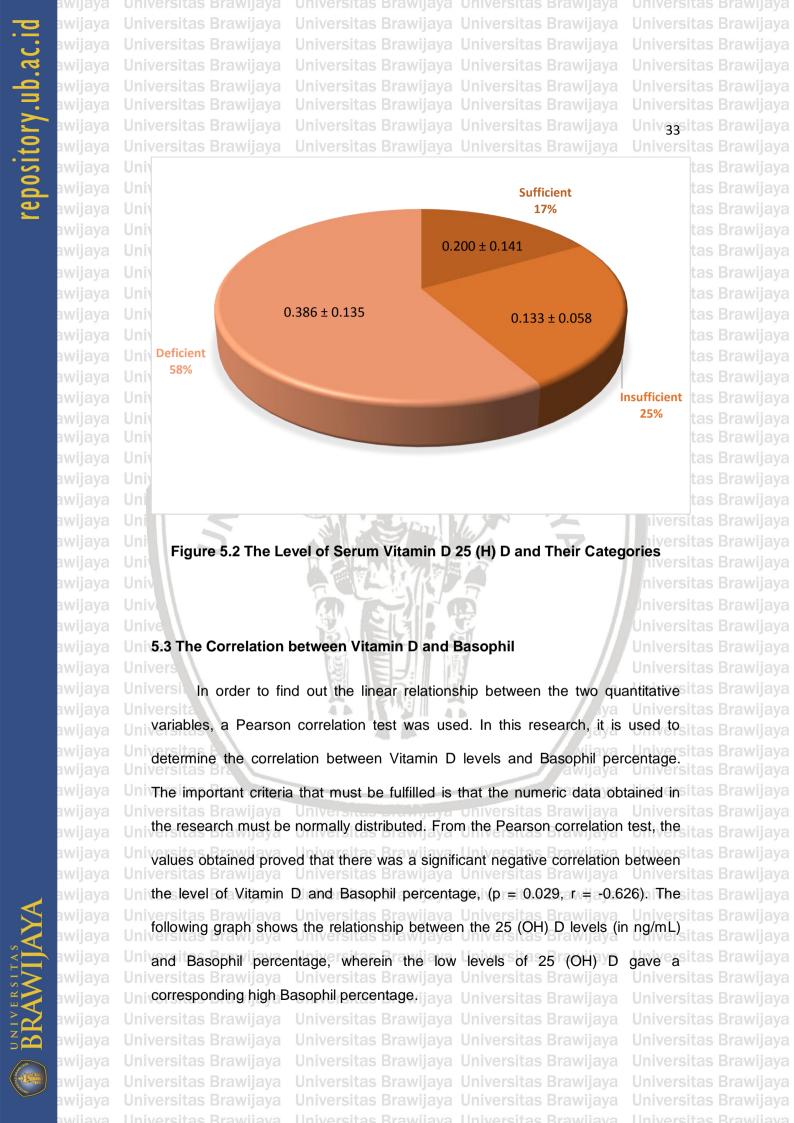
### Figure 5.1. Vitamin D Levels and Mean Values of Basophil

The subjects of this research can be divided into three different categories based on their respective levels of Vitamin D. A total of seven patients (58%) were afflicted with Vitamin D deficiency (25 (OH) D <20 ng/mL). Meanwhile, the number of patients who had an insufficient amount of Vitamin D (25 (OH) D 20-30 ng/mL) were three (25 %). Finally, there were only two patients (17%) who had sufficient amount of Vitamin D 25 (OH) D >30 ng/mL). The amount of serum 25 (OH) D in each category in shown in a pie chart in figure 5.2.

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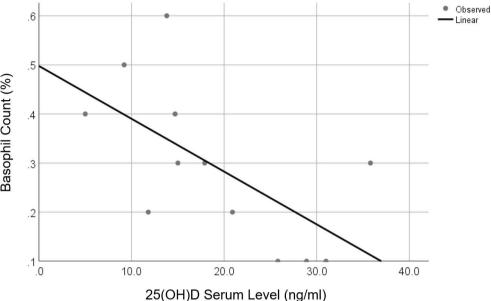
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### Figure 5.3 The Graph of Correlation between the 25 (OH) D Serum rates Brawijaya

Levels and Basophil Percentage

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Linear

Universitas Brawijaya awijaya UniversitasCHAPTER 6 Universitas Brawijaya Universita DISCUSSIONUniversitas Brawijaya Universitas Brawijaya awijaya awijaya This cross-sectional study is aimed to determine the correlation between the study is a sectional study is a sectional study is a sectional study is a section between the section between awijaya awijaya Un Vitamin D levels and Basophil percentage. The subjects were comprised of 12 tas Brawiava awijaya patients. Of those patients, seven were females and five were males. The awijaya awijava awijaya Un subjects' ages ranged from two to 12 month old patients who were diagnosed tas Brawlaya awiiava with Atopic Dermatitis. awijaya awijaya There are many factors that contribute to the development of atopic tas Brawijava awijaya awijaya dermatitis. Some of them include environmental and pharmacologic conditions as awijaya awijaya well as microbial exposure (Pandaleke, 2014). Dust mites and pollen can also that Brawlaya awijaya trigger eczema flare ups. AD is a common occurrence in people who easily react awijaya awijaya towards chemicals or irritants such as cleaning products like soaps and awijaya awijaya Uni detergents (Jones, 2018). awijaya awijaya Many patients with atopic dermatitis experience symptoms stimulated by it as Brawijaya awijaya allergens such as dust mites, animal dander and pollen, foods like milk, eggs, tas Brawijava awijaya awijaya nuts and fish. Environmental conditions including extreme temperatures, awijaya awijaya Uniseasonal changes, humidity and smoke are responsible for triggering AD as well. It as Brawijaya awijava Some of the irritants that cause flare ups encompass soaps, detergents, creams awijaya awijaya and topical medications, materials worn on the skin such as wool and synthetic awijaya In fabrics. Other factors worth mentioning are hormonal changes in women tas Brawijava especially during pregnancy or menstruation and infections caused by bacteria and virus (Chen et al., 2007). Sitas Brawijaya Universitas Brawijaya

Universitas Brawijaya awijaya Universit According to a research conducted regarding the impact of gender and itas Brawijava age on 25 (OH) D concentrations is so little that it was negligible (Vuistiner et al., 2015). In another study, it was proven that age and body mass index were two tas Brawlaya awijaya factors that provide remarkable effects in Vitamin D synthesis and bio-availability. awijaya Based on the NHANES 2001-2004 data, an estimated 30% of adults above the awijaya awijaya age of 50 years were known to have serum 25 (OH) D concentrations below 50 tas Brawijava awijaya Universitas Brawijaya awijaya nmol/L or approximately 15.7 ng/mL. This is also because of a plummet in the awijava Uniskin's 7-dehydrcholesterol content which is age-dependent (Tsiaras and itas Brawijaya awijaya awiiava WIJ V Uni Weinstock, 2011) awijaya awijaya awijaya awijaya awijaya 6.2 Vitamin D Levels in Patients with Atopic Dermatitis awijaya In this research, the amount of Vitamin D was only sufficient in two awijava awijava Unipatients, leaving three patients with insufficiency and seven with deficiency. Asitas Brawijava awijaya awijaya person is said to have a sufficient amount of Vitamin D when he or she has a awijaya awijaya Serum 25 (OH) D level above 30 ng/mL. Vitamin D insufficiency is defined as a las Brawlaya awijaya serum 25 (OH) D level of 21-29 ng/mL. Meanwhile, Vitamin D deficiency is when awijaya awijaya the serum 25 (OH) D level is below 20 ng/mL. awijaya awijaya There are a wide range of factors that influence the level of Vitamin D in awijaya awijava humans. Some of them include genetics, exposure to sunlight, climate, and the tas Brawlaya awijaya changes in seasons, atmospheric components, skin pigmentation, age, obesity, tas Brawijava awijaya awijaya chronic illnesses, personal factors such as clothing choices and the usage of sun Uniprotection (Tsiaras and Weinstock, 2011). ava Universitas Brawijava Universitalit is proven that there is an inverse correlation between body-mass index it as Brawlaya (BMI) and Vitamin D concentrations (Vuistiner et al., 2015). This is mainly a result tas Brawijava

Universitas Brawijaya Un of decreased sun exposure which could be caused by little or no involvement insistant Brawing outdoor activities, insufficient nutrients in a poor diet and Vitamin D sequestration (Nowson et al., 2002). Skin pigmentation affects the concentration of Vitamin D in Itas Brawlaya awijaya humans due to the fact that sunlight exposure is the most important source of awijaya awijaya Vitamin D. Studies that were conducted on people of African ethnicity revealed awijaya Universitas Brawijaya Un that they were indeed susceptible to Vitamin D deficiency since dark skin tas Brawi ava awijaya awijaya provides protection against UVB radiation (Shieh et al., 2017). awijava awijaya A study conducted in Hong Kong showed that genetic factors caused awiiava awijaya atopic dermatitis in around 70% of patient. The defect in Fillagrin gene can cause awijaya awijaya moderate to severe AD in up to one third of people in East Asia (Boguniewicz Itas Brawl) awijaya and Leung, 2013). Atopic dermatitis in adults is more common in Asia compared awijaya awijaya to western countries. In terms of gender, females are found to be slightly more awijava susceptible to AD with a ratio of female: male ratio of 1.3:1 (Chan, 2006). awijava awijaya Many studies conducted on the relationship between breastfeeding and itas Brawijaya awijaya awijaya atopic dermatitis have shown controversial findings. However, the most studies awijaya awijaya have concluded that exclusive breastfeeding does not play a role in preventing awijaya atopic dermatitis. However, it has been known to significantly reduce the severity awijaya of AD in childhood. This is true especially when the infant has been breastfed awijaya exclusively for a minimum of three months (Lien and Goldman, 2011). awijava awijaya Vitamin D supplementation can result in a significant reduction in the awijaya Universitas Brawijaya Universitas Brawijaya In amount of neutrophils present within white blood cells. Vitamin D plays a crucial it as Brawijava role in both adaptive and innate immunity. Recently, vitamin D receptors (VDR) were discovered and detected in many tissues and cells in humans including almost all immune cells such as B cells, T cells, dendritic cells, neutrophils and tas Brawijava

Universitas Brawijaya In macrophages. In innate immunity, Vitamin D induces antimicrobial peptidesitas Brawijava synthesis but inhibits the expression of TLR (Toll-like receptor) and the proinflammatory cytokine production. In adaptive immunity, Vitamin D causes the tas Brawlaya awijaya reduction of Th-1 cytokine production and inhibition of T cell proliferation (Hoxha, awijaya Universitas Brawijaya awijaya awijaya Universitas I awijaya is known that Vitamin D has the ability to repress inflammatory awijaya awijaya Universionses that occur in the body. It can enhance antimicrobial peptide activity it as Brawl awijaya and increase the integrity of the skin's permeability. Due to this reason, Vitamin D awiiava awijaya can be utilised as a therapeutic method to heal a number of skin disorders awijaya awijaya Univincluding but not limited to dry skin, psoriasis and of course; atopic dermatitisates Brawli awijaya (Umar et al., 2018). In a study conducted to determine the effect of Vitamin D on awijaya awijaya winter- related atopic dermatitis, children who were given a Vitamin  $D^{>}$ awijaya awijaya Univsupplementation for one month experienced a remarkable improvement insitas Brawijaya awijaya baseline score compared to the placebo group (Sidbury *et al.*, 2008). awijaya awijaya Atopic dermatitis was proven to be prevalent in patients with Vitamin D awijaya awijaya deficiency and Vitamin D serves as a method of prevention due to its awijaya Un immunomodulatory property. Since vitamin D is known to trigger the tas Brawi awijaya awijaya pathogenesis of atopic dermatitis, the supplementation of vitamin D can be useful awijaya for the recovery of atopic dermatitis (Chirumbolo et al., 2017). Studies and awijava Un investigations in the field of immunology and epidemiology have proven that it as Brawi awijaya awijaya there is a relationship between Vitamin D deficiency and allergic skin diseases, in particular skin inflammation. Vitamin D deficiency is mostly involved with the tas Brawlaya increase in susceptibility to chronic skin diseases such as atopic dermatitis and chronic idiopathic urticarial (Oren et al., 2008).

Universitas Brawijaya awijaya Universita Vitamin D contains the ability to induce the terminal differentiation as wells tas Brawijava as inhibit the proliferation of keratinocytes. As a result, it is used as a treatment for psoriasis. In addition to that, it was found that mice that were afflicted with an itas Brawlaya awijaya increased contact hypersensitivity response compared to those who have awijaya sufficient amount of Vitamin D. Immune cells express Vitamin D receptors or awijaya awijaya aya Universitas Brawijaya Uni VDRs and their activation reduces inflammation. Vitamin D deficiency is also an itas Brawijava awijaya awijaya implication in patients with autoimmunity (Umar et al., 2018). awijava awijaya Vitamin D has an important role in both adaptive and innate immunity awiiava awijaya (Hoxha, 2011). The active form of Vitamin D, which is a component called awijaya Un Calcitriol is synthesized by cells like monocyte-macrophages in the immune tas Brawijaya awijaya awijaya system where it performs a crucial role as a cytokine. It function is quite awijaya awijaya significant as it aids in the modulation of the body defences against microbes awijaya Un through a process which stimulated the innate immune system (Holick, 2009) versitias Brawiava awijava awijaya awijaya awijaya awijaya 6.3 Basophils in Patients with Atopic Dermatitis awijaya awijaya Universita In this study, the mean value for Basophil percentage was 0.292. The sitas Brawijaya awijaya Un maximum value obtained for Basophil percentage was 0.6 while the minimum tas Brawijava awijaya awijaya value obtained was 0.1. The normal value of basophils in infants aged 2-12 awijaya Universitas Brawijaya Universitas Brawijaya Universitas Brawijaya awijaya awijaya awijaya Basophils in humans are capable of infiltrating skin lesions and are awijaya involved in the pathogenesis of skin diseases such as chronic idiopathic urticarial tas Brawlava and systemic lupus erythematosus. Many studies have proven that skin lesions of patients who have been diagnosed with AD are enriched with basophils. Several itas Brawijaya Un years ago, a study proved that patients who were afflicted with food allergy and tas Brawijava

Universitas Brawijaya awijaya Un severe atopic dermatitis had a remarkable increase in spontaneous basophils tas Brawijava release of histamine (Borriello et al., 2014). In addition to that, a study proved that the basophils from antigen-specific awijaya awijaya IgE-mediated activation were found in the peripheral blood of patients with atopic tas Brawlaya awijaya dermatitis (Tsiaras and Weinstock, 2011). When there is an increase in tas Brawi ava awiiava awijaya Basophils, it is mostly due to allergy, autoimmunity, and cancer or organ awijaya awijava In rejection. Basophils play an important role in the pathogenesis of atopic tas Brawlaya awijaya dermatitis among other diseases. In a research conducted with mice, it was awiiava awijaya concluded that IgE-dependent basophils played a crucial role in the pathogenesis awijaya awijaya Uni of atopic dermatitis (Siracusa et al., 2013). They are also important in Ig-Esitas Brawijaya awijaya independent allergic inflammation such as asthma induced by allergenic awijaya proteases, irritant contact dermatitis, eosinophilic esophagitis (Miyake and the Brawi awijaya awijava Uni Karasuyama, 2017). awijava awijaya awijava awijaya awijaya 6.4 The Relationship between Vitamin D level and Basophils awijaya awijaya Universita The aim of this study is to prove that there is a relationship between the sitas Brawijaya awijaya Un Vitamin D level and Basophil percentage in infants with Atopic Dermatitis. The tas Brawijava awijaya awijaya percentage of basophils is high in patients with low levels of Vitamin D, therefore awijaya awijava there is a negative correlation between Vitamin D levels and the percentage of awijaya Uni basophils rawijaya Universitas Brawijaya Universitas Brawijaya Universitas Brawijaya awijaya awijaya UniversitaA study conducted in 2017 has proved that there is an inverse correlation it as Brawijava between Vitamin D and the number of circulating basophils (Filho et al., 2017). Vitamin D supplement has been proven to decrease the number of basophils in Un circulation in mice with allergic airway diseases. In addition to basophils, Vitaminsitas Brawijava

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Universitas Brawijaya awijaya Un D also shows an inverse correlation with the numbers of eosinophils and itas Brawijava neutrophils in the circulation (Hollams et al., 2011). Vitamin D has the ability to modulate the inflammation process in the body awijaya by regulating the inflammatory cytokines produced in immune-related diseases. It as Brawlaya awijaya awijaya un can also inhibit prostaglandins which are involved in inflammation in addition tositas Brawijava awijaya awijaya immune cells such as B cells and T cells via VDR (Liu et al., 2018). awijaya awijava awijaya awiiava 6.5 The Limitations of the Study awijaya awijaya In this research, the relationship between Vitamin D levels and the las Brawiava awijaya awijaya percentage of basophils was studied. The most obvious limitation of this study is awijaya awijaya the small sample size. Although the subjects of this study were children who were the state brawliava awijaya diagnosed with atopic dermatitis, the effect of Vitamin D on them would be better as Brawlava awijaya awijaya examined by evaluating the symptoms experienced by them. Since the design of awijaya awijaya Unithis study was cross-sectional, it is unknown if atopic dermatitis causes Vitamin Daltas awijaya deficiency or vice versa. In order to determine this, a clinical study would be more awijaya awijaya useful. Another disadvantage of this study is the lack of clinical information tas Brawlaya awijaya Uni regarding the subjects that were studied. There were no information on whethers tas Brawijava awijaya awijaya or not patients were breastfed exclusively or given additional liquid or solid food. awijaya awijaya As discussed before, there is indeed a relationship between breastfeeding and tas Brawlaya awijaya atopic dermatitis. It is also not known if the subjects suffer from other diseases. Brawlava awijaya awijaya Finally, other factors that affect Vitamin D levels such as sunlight exposure, skin Unipigmentation and nutrition were not explored. Universitas Brawijaya awijaya

Universitas Brawijaya UniversitasCHARTER7 Universitas Brawijaya CONCLUSION AND SUGGESTIONS Brawijava awijaya 7.1 Conclusion awijaya The following conclusions were obtained from this research: awijaya awijaya awijaya 1. The level of vitamin D in serum in children with atopic dermatitis in the awijaya Universita paediatric department of Saiful Anwar Hospital is lower than the normal itas Brawijava awijava awijaya range awiiava Universe 2 awijaya The percentage of basophils is higher in Vitamin D deficient children with awijaya atopic dermatitis in the paediatric department of Saiful Anwar Hospital awijaya awijaya There is a negative correlation between the Vitamin D level in serum and awijaya awijaya the percentage of basophils in children with atopic dermatitis in the Brawijaya awijava paediatric department of Saiful Anwar Hospital awijaya awijaya awijaya awijaya 7.2 Suggestions awijaya awijaya The suggestions proposed in this research are as follows: awijaya awijaya 1. The sample size used in this study was too small awijaya awijaya 2. In this study, other factors that affect vitamin D levels such as sunlight versitas Brawijaya awijaya awijaya Universita exposure or nutrition were not evaluated iniversitas Brawijaya awijaya 3. Since this is a cross-sectional study, it is not known whether atopic awijaya order to Brawijaya dermatitis caused Vitamin D deficiency or vice versa. In awijaya Universita determine that, a clinical study should be conducted. Brawijava

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Univasitas Brawijaya Univer 4. The effect of Vitamin D on patients with Atopic Dermatitis would have it as Brawijava been better determined by evaluating the clinical manifestations present sitas Brawijaya

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Universitas Brawijaya Univer 2: a Informed Consent Form & Brawijaya Universitas Brawijaya Universita PENJELASAN UNTUK MENGIKUTI PENELITIANAS Brawijava 1. Saya adalah Jafrina Jasmin, mahasiswa S1 Kedokteran Universitas Brawlaya Universita Brawijaya Malang dengan ini meminta anak Bapak/ibu/sdr untuk tas Brawijaya berpartisipasi dengan sukarela dalam penelitian yang berjudul "Pengaruh tras Brawijaya Pemberian Suplementasi Vitamin D3 Terhadap Perbaikan Profil Klinis dan Imunologis pada Pasien Anak dengan Dermatitis Atopi". 2. Tujuan penelitian ini yang pertama adalah untuk mengetahui kadar berawijaya ersita Vitamin D pada pasien anak dengan Dermatitis Atopi yang dikaitkan itas Brawijaya Universita dengan gejala klinis dan hasil laboratorium. Yang kedua, penelitian inistras Brawijaya juga bertujuan untuk mengetahui pengaruh pemberian suplemen Vitamin ses Brawijaya D3 terhadap perbaikan gejala klinis, hasil lab, serta kualitas hidup pasien tas Brawijaya anak dengan Dermatitis Atopi. Hasil penelitian ini diharapkan dapat menjadi dasar dalam pengambilan kebijakan terkait terapi yang akan diberikan kepada pasien, terutama mengenai pentingnya pemberian tas Brawijaya supmentasi vitamin D pada pasien anak dengan Dermatitis Atopi.

Penelitian ini akan berlangsung selama kurang lebih 2 bulan untuk tas Brawijaya 3. masing-masing pasien. Pada kunjungan pertama pasien akan dilakukan pengambilan data identitas, pengisian kuesioner, pengambilan sampel darah serta mendapatkan terapi. Setelah 2 bulan terapi, pasien kontrolsitas Brawijaya untuk dilakukan evaluasi hasil terapi, pengisian kuesioner dan tas Brawijava pengambilan sampel darah ulang.

Keuntungan yang Bapak/ibu/sdr dan anak Bapak/ibu/sdr peroleh dengan sas Brawi keikutsertaan anak Bapak/ibu/sdr dalam penelitian ini adalah dapat mengetahui perkembangan kondisi terkini terkait penyakit anak Bapak/ibu/sdr. Manfaat langsung yang Bapak/ibu/sdr dan anak Bapak/ibu/sdr peroleh adalah mengetahui kadar beberapa parameter as Brawlaya laboratorium terkait dengan penyakit anak Bapak/ibu/sdr sehingga doktersitas Brawiava dapat memberikan terapi yang tepat sesuai dengan kondisi pasien. Selain terapi yang tepat sesuai dengan kondisi pasien. itu Bapak/ibu/sdr dan anak Bapak/ibu/sdr dapat mengetahui derajad penyakit anak Bapak/ibu/sdr sehingga dapat digunakan untuk monitoring dan Bapak/ibu/sdr dapat mengetahui apa saja yang harus dilakukan dan Brawijaya Universita tidak boleh dilakukan untuk mencegah perburukan kondisi penyakit anaksitas Brawijaya Bapak/ibu/sdr. Manfaat tidak langsung yang dapat diperoleh adalah sas Brawijaya memberikan mengenai pengaruh informasi ilmiah pemberian suplementasi vitamin D3 terhadap perbaikan gejala klinis dan hasil lab pada pasien anak dengan Dermatitis Atopi sebagai dasar dalam tas Brawijaya Universita tatalaksana dan monitoring pasien Dermatitis Atopi secara umum. Universitas Brawijaya

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Universitas Brawijaya Univer 5. Ketidaknyamanan/ risiko yang mungkin muncul yaitu pada saat prosedur tas Brawi pengambilan sampel darah mungkin menyebabkan rasa nyeri namn tidak perlu kuatir karena pengambilan sampel darah dilakukan oleh petugas profesional sehingga risiko/ kerugian yang dapat terjadi minimal. Terkait pemberian suplementasi vitamin D3 setiap hari selama 2 bulan, bila bas Brawlava awijaya ersitateriadi efek samping seperti mual, muntah, lemas, nyeri tulang dan tas Braw gangguan perkemihan maka pasien dapat langsung menghubungi peneliti dengan nomor telepon yang tertera pada kartu kendali obat, untuk awijaya selanjutnya dilakukan pemeriksaan dan tindakan berikutnya. awijaya 6. Pada penelitian ini, prosedur pemilihan subjek yaitu pasien anak dengan awijava ersita diagnosis Dermatitis Atopi, usia 1 – 12 bulan, tidak mengkonsumsi Universita vitamin D dalam 6 bulan terakhir, tidak ada kelainan absorbsi pada itas Brawijava awijaya infeksi sekunder yang tas Braw saluran cerna, serta tidak mengalami awiiava membutuhkan terapi antibiotik. Mengingat anak Bapak/ibu/sdr memenuhi awijava kriteria tersebut, maka peneliti meminta kesediaan anak Bapak/ibu/sdr awijaya untuk mengikuti penelitian ini setelah penjelasan peneletian ini diberikan. Stas Braw awijaya awijaya awiiava Prosedur penelitian yang harus diikuti yaitu pengisian data pasien dan kuesioner, pengambilan sampel darah, melaksanakan terapi sesuai tas Brawijaya awijaya petunjuk dokter serta kontrol 2 bulan berikutnya. Pengisian data dan awijava kuesioner dilakukan oleh orang tua pasien dengan dibantu oleh tim awijava peneliti. Pengambilan sampel darah pasien dilakukan oleh petugas yang telah berpengalaman dengan cara menusukkan jarum ke dalam<sup>sitas Brawij</sup> pembuluh darah vena yang terletak di lipat siku bagian dalam kurang tas Brawi awijaya lebih sebanyak 5 cc. Terapi yang diberikan untuk pasien berupa krim awijaya topikal yang mengandung emolien dan steroid serta suplementasi vitamin awijaya D3 dalam bentuk sirup. awijaya awijava anak 8 Setelah Bapak/ibu/sdr menyatakan kesediaan atas dan Bapak/ibu/sdr untuk berpartisipasi dalam penelitian ini, maka peneliti akan itas Brawi memastikan anak Bapak/ibu/sdr dalam keadaan sehat. awijaya awijaya Univer 9. Sebelum pengisian kuisioner/ wawancara, peneliti akan menerangkan tas Brawijaya Universita cara mengisi kuesioner kepada Bapak/ibu/sdr dan anak Bapak/ibu/sdr, tas Braw awijaya selama kurang lebih 10 menit, dengan cara memberikan contoh secara

langsung, sesuai dengan pengalaman yang anda alami menggunakan tinta hitam. ersitas Brawijaya Universitas Brawijaya Universitas Brawijaya

10. Sebelum pengisian kuesioner/ wawancara, peneliti akan memberikan tas Brawijaya Universita penjelasan mengenai setiap poin pertanyaan dalam kuesioner penelitian das Brawijaya Universita dan cara menjawabnya tas Brawijaya Universitas Brawijaya

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Universitas Brawijaya 11. Selama pengisian kuesioner/ wawancara, diperkenankan bagi as Bravilava Bapak/ibu/sdr untuk menanyakan apabila ada yang belum dipahami darisitas Brawijaya isi kuisioner. awijaya awijaya awijaya 12. Setelah mengisi kuesioner/ wawancara, Bapak/ibu/sdr dapat melakukan awijaya tukar pengalaman dan tanya jawab dengan peneliti awijaya awijaya awijava 13. Bapak/ibu/sdr dapat memberikan umpan balik dan saran pada peneliti awijaya terkait dengan proses pengambilan data dengan kuesioner/ wawancara baik selama maupun setelah proses pengisian kuesioner/ wawancara as Brawijaya awiiava secara langsung pada peneliti. awijaya awijaya awijaya 14. Peneliti akan memberikan waktu satu hari kepada Bapak/ibu/sdr untuk awijaya menyatakan berpartisipasi/ tidak dalam penelitian ini secara sukarela, awijaya sebelum pengisian kuesioner/ wawancara. awijaya awijava awijava 15. Seandainya Bapak/ibu/sdr tidak menyetujui cara ini maka Bapak/ibu/sdr awijaya dapat memilih cara lain atau Bapak/ibu/sdr boleh tidak mengikutistas Brawijaya penelitian ini sama sekali. awijava awijaya awijaya Univer 16. Jika Bapak/ibu/sdr menyatakan bersedia menjadi responden namun tas Brawijaya awijaya disaat penelitian berlangsung anda ingin berhenti, maka Bapak/ibu/sdr awijaya dapat menyatakan mengundurkan diri atau tidak melanjutkan ikut dalam awijaya penelitian ini. Tidak akan ada sanksi yang diberikan kepada Bapak/ibu/sdr awijaya Universita terkait hal ini. awijaya awijaya awijava Univer 17. Nama dan jati diri anak Bapak/ibu/sdr akan tetap dirahasiakan, sehingga das Brawlaya Universita diharapkana Bapak/ibu/sdr\_tidak merasa khawatir\_dan dapat mengisisitas Brawijava awijaya kuisioner sesuai kenyataan dan pengalaman Bapak/ibu/sdr yang Brawijaya awijaya sebenarnya. awijaya 18. Jika Bapak/ibu/sdr merasakan ketidaknyamanan atau dampak karena mengikuti penelitian ini, maka Bapak/ibu/sdr dapat menghubungi peneliti yaitu Dr. dr. Wisnu Barlianto, SpA(K), Masi. med dengan nomor tas Brawijaya

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Universitas Brawijaya Univers19. Perlu Bapak/ibu/sdr ketahui bahwa penelitian ini telah mendapatkan tas Brawijaya persetujuan kelaikan etik dari suatu Komisi Etik Penelitian Kesehatan Brawijaya FKUB, sehingga Bapak/ibu/sdr tidak perlu khawatir karena penelitian ini akan dijalankan dengan menerapkan prinsip etik penelitian yang berlaku. awijaya 20. Hasil penelitian ini kelak akan dipublikasikan namun tidak terdapat as Brawlaya awijaya awijaya Universita identitas anak Bapak/ibu/sdr dalam publikasi tersebut sesuai dengan itas Brawijaya Universita prinsip etik yang diterapkan. awijaya awijaya awijaya 21. Peneliti akan bertanggung jawab secara penuh terhadap kerahasiaan as Brawlava awijava data yang Bapak/ibu/sdr berikan dengan menyimpan data hasil penelitian awijaya yang hanya dapat diakses oleh peneliti. awiiava awijaya awijaya 22. Jika Bapak/ibu/sdr bersedia menjadi partisipan penelitian ini, awijaya Bapak/ibu/sdr akan mendapatkan kompensasi berupa uang transport awijaya sebesar Rp 50.000,00. awijaya awijaya 23. Peneliti akan memberi tanda terima kasih berupa mainan untuk anak tas Brawijaya awijava Bapak/ibu/sdr seharga Rp 50.000,00. awijaya awijaya awijava awijaya awijaya Peneliti Utama sitas Brawijaya awijaya awijaya awijaya awijaya awijaya awijaya awijava Dr. dr.Wisnu Barlianto, SpA(K), Msi. med Universitas Brawijaya Universitas Brawijaya awijaya awijaya awijaya

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Unive Pernyataan Persetujuan untuk Brawijaya Univ Berpartisipasi dalam Penelitian Brawijaya Universita Saya yang bertandatangan dibawah ini menyatakan bahwa : aya 1. Saya telah mengerti tentang apa yang tercantum dalam Universita penjelasan dan telah dijelaskan oleh peneliti ersitas Brawijaya

Univer 2. Dengan ini saya menyatakan bahwa secara sukarela mengijinkan anak itas Brawijaya saya untuk ikut serta menjadi salah satu subyek penelitian yang berjudul sasa Brawijaya "Pengaruh Pemberian Suplementasi Vitamin D3 Terhadap Profil Klinis dan Imunologis Pasien Anak dengan Dermatitis Atopi".

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Peneliti

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### Malang,

Yang membuat pernyataan

Saksi II

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awijaya	Univers5ta®	ormality and	Homogenit	<b>y Test</b> jaya	Universita	as Brawija	aya Univ	ersitas	Brawija
awijaya	Universitas E							ersitas	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	60sitas I	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	ersitas I	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	ersitas	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	ersitas	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	ersitas	Brawija
awijaya	Universitas E	Brawijaya l	Jniversitas	Brawijaya	Universita	as Brawija	aya Univ	ersitas	Brawija
awijaya	Universitas E	srawijaya i	Jniversitas	вгажијауа	Universita	as Brawija	aya univ	ersitas	Brawija

Univ \*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

		<b>-</b>		
		Levene Statistic	df1	df2
Basophil	Based on Mean	.908	2	9
	Based on Median	.964	2	9
	Based on Median and with adjusted df	.964	2	7.538
	Based on trimmed mean	.937	2	9
ers				

Sig.

424 .427 Universitas Brawijaya

437 itas Brawijaya

.417 itas Brawijaya

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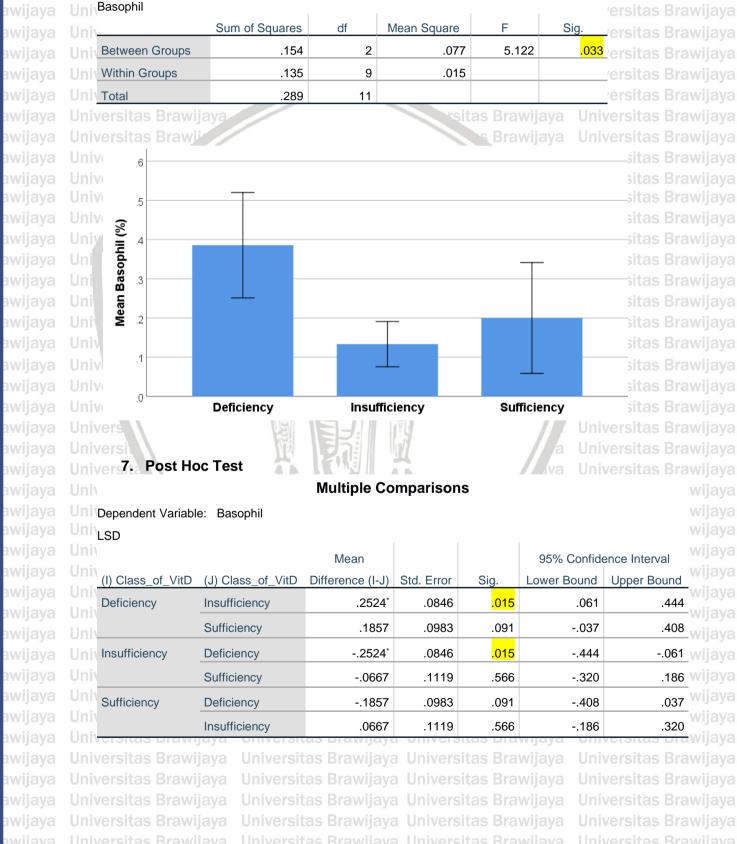
awijaya awijaya Univer 6.a One Way ANOVA Test as Brawijaya Universitas Brawijaya awijaya

Universitas Brawijaya

ANOVA

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### repository.ub.ac.id awijaya Universitas Brawijaya awijaya Univer 8: a Pearson Correlation Test Brawijaya Universitas Brawijaya Correlations awijaya Basophil VitD awijaya VitD - 626\* Pearson Correlation 1 awijaya .029 Sig. (2-tailed) awijaya Ν 12 12 awijaya -.626\* <u>1</u>ersitas Brawijaya **Pearson Correlation** Basophil awijaya Sig. (2-tailed) .029 awijaya 12 Ν 12 awijaya Univ\*. Correlation is significant at the 0.05 level (2-tailed). awijaya RAW, awijaya awijaya awijaya awijaya Observed awijaya .6 Linear awijaya awijaya 5 awijaya Basophil Count (%) awijaya .4 awijaya awijaya .3 awijaya awijaya awijaya .2 awijaya awijaya 1.0 30.0 awijaya 10.0 20.0 40.0 awijaya 25(OH)D Serum Level (ng/ml) awijaya The Graph of Correlation between the 25 (OH) D Serum Levels and awijaya Univer Basophil Percentage ersitas Brawijaya awijaya awijaya Universitas Brawijaya Universitas Brawijaya awijaya awijaya BRAWIIAYA awijaya