

Low Glycemic Diet and Improvement of Acne Vulgaris Symptoms: Systemic Review

Shahad Mahmoud Aldor¹, Aymen Hamed Alharbi^{2*}, Bilqis Ahmed Albarakati¹,
Imtinan Khalid Alsaifi¹, Ghaida Bakoar Alahmadi¹, Luai Mohammed Assaedi¹,
Rami Fawzi Maghlah¹, Bassam Hussain Bugis¹

¹MBBS, Umm Alqura University, Makkah, Saudi Arabia.

²MD, Consultant Dermatologist & Hair Disorders,

Director of Dermatology Residency Program, King Abdulaziz Hospital, Makkah, Saudi Arabia.

ABSTRACT

Introduction: Acne Vulgaris is a widespread condition that affects around 85% of young people. This spread of the disease among adolescent has allowed linking the disease with distinct factors one of which is diet. Our focus is to see the effect of low glycemic regimens in acne vulgaris.

Method: Different databases were searched for related reviews, and these include PubMed, Medline, EMBASE, Cochrane and Google Scholar from January 1, 2010, until December 31, 2016. We used a filter paper to exclude all unrelated titles then unrelated abstracts which left us with a total of 57 articles but only 39 articles were chosen, other articles were rejected because they were irrelevant to the study objectives. Each article was carefully read by the main author.

Discussion: Many studies have found that dietary habits, fat, sugar, and fast food consumption were positively correlated with acne prevalence. These articles suggest that the increased dietary glycemic load may augment the biological activity of sex hormones and IGF-1 that may aggravate potential factors involved in acne development, whereas a

low glycemic load is associated with increased insulin sensitivity and higher levels of IGFBH-1 and IGFBH-3, which may reduce the factors involved in the pathogenesis of acne. In conclusion, these studies suggest high glycemic load diets and dairy products were positively associated with acne vulgaris development.

Keywords: Acne, Vulgaris, Treatment, Glycemic Diet.

*Correspondence to:

Dr. Aymen Alharbi, M.D.

Consultant Dermatologist & Hair Disorders,
Director of Dermatology Residency Program,
King Abdulaziz Hospital, Makkah, Saudi Arabia.

Article History:

Received: 10-10-2017, Revised: 02-11-2017, Accepted: 27-12-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2018.4.1.002	

INTRODUCTION

Acne Vulgaris (common acne) a chronic cutaneous disease affecting the pilosebaceous unit of the skin. The condition manifest into a variety of lesions ranging from non-inflammatory comedones and inflammatory papulopustular and nodules or cyst.¹ The development of acne vulgaris is multifactorial with genetic susceptibility being a key eliminate.² There are four major pathogenic factors: Inappropriate follicular keratinization in which the corneocyte of the stratum corneum increase in proliferation leading to blocking the sebum drainage and formation of comedones, A hormonal factor is contributing to the increased production of sebum mainly through androgen production especially during puberty. A normal inhabitant of the flora is the gram +ve Propionibacterium acnes (P. acnes) which is an anaerobic rod found in higher concentration in acne patients as it normally cleaves the lipids of the sebum through lipase action and releases fatty acids and proinflammatory mediators. Finally,

production of inflammatory cytokines from CD4⁺ T cells and activation of inflammatory cascades around the follicles has been contributed into the pathogenesis of acne.^{3,4}

Acne Vulgaris is a widespread condition epidemiological wise it affects around 85% of young people.⁵ This vast spread of the disease among adolescent has allowed the emergence of many articles to link the disease with distinct factors one of which is diet. Our focus is the effect of low glycemic regimens in acne vulgaris. We're aiming to pull out all the published research in this regard and tries to draw out a scientific conclusion on the matter to see if a recommendation of carbohydrate modification as a main stray of treatment is warranted or not.

METHODOLOGY

Different databases were searched for related reviews, and these include PubMed, Medline, EMBASE, Cochrane and Google

Scholar from January 1, 2010, until December 31, 2016, using the keywords: Acne, vulgaris, treatment, glycemic diet. We used a filter paper to exclude all unrelated titles then unrelated abstracts which left us with a total of 57 articles but only 39 articles were chosen, other articles were rejected because they were irrelevant to the study objectives. Each article was carefully read.

DISCUSSION

Acne vulgaris is a common skin disease affecting 85% of the world's population aged between eleven to thirty years. It affects all races, although it is less intense in Asians and Blacks.⁶

Ecologic Studies

It is believed that diet could affect acne. This belief impacted behavior, as the majority had changed their diets in order to improve their acne.⁷ many studies found that dietary habits. Fat, sugar and fast food consumption were found to be positively correlated with acne prevalence. also, Stress is perceived to be a major trigger factor in exacerbating acne vulgaris, and this has been supported by early retrospective studies.⁸

Pathophysiology

The dietary glycemic load is a measure of the blood glucose- and insulin-increasing potential, as it represents both the rate of carbohydrate absorption (the GI) and the quantity of carbohydrate consumed.⁹ Previous research revealed that a high glycemic load diet could initiate a signaling cascade resulting in significant increase in insulin and insulin-like growth factor 1 (IGF-1) activity and decreased IGF-binding protein 3 (IGFBP-3) activity. Decreased IGFBP-3 effectively increases the bioavailability of IGF-1, compounding its direct activation. IGF-1 is known to stimulate key factors of acne pathogenesis, including keratinocyte proliferation, sebocyte proliferation, and lipogenesis.¹⁰⁻¹³

Treatment

Treatments for the disease are typically topical: benzoyl peroxide or retinoids; antibacterial: macrolides (topical) or tetracyclines (oral); hormonal: oral contraceptives or androgen receptor blockers; or systemic: isotretinoin. Each treatment option can be tailored to the patient based on his or her clinical presentation.

Acne and Dairy Products

Researchers hypothesized that the hormones found in milk have a role in acne risk. A study from 2005 showed that components of milk, other than lipids, have insulin-stimulating abilities.¹⁴ Another hypothesis is suggesting that iodine content of milk might also have a role in the development of acne.¹⁵

High Glycemic Index Foods

studies suggest that Increased dietary glycemic load such as may augment the biological activity of sex hormones and IGF-1 that may aggravate potential factors involved in acne development, whereas a low glycemic load is associated with increased insulin sensitivity and higher levels of IGFBH-1 and IGFBH-3, which may reduce the factors involved in the pathogenesis of acne.¹⁶

CONCLUSION

In conclusion, these studies suggest high glycemic load diets and dairy products were positively associated with acne vulgaris development, a further requirement of studies and investigation to recommend certain foods or supplements for some promising effect that might help acne, a dermatologist must be able to counsel patients appropriately and give dietary change recommendations.

REFERENCES

1. Mourelatos, K., Eady, E.A., Cunliffe, W.J., Clark, S.M. and Cove, J.H. (2007), Temporal changes in sebum excretion and propionibacterial colonization in preadolescent children with and without acne. *British Journal of Dermatology*, 156: 22–31.
2. V Goulden .The Familial Risk of Adult Acne: A Comparison between First-Degree Relatives of Affected and Unaffected Individuals, *The British Journal of Dermatology*, 141.2(1999),297–300.
3. J F Norris .A Histological and Immunocytochemical Study of Early Acne Lesions, *The British Journal of Dermatology*, 118.5 (1988), 651–59.
4. Anthony H T Jeremy .Inflammatory Events Are Involved in Acne Lesion Initiation, *The Journal of Investigative Dermatology*, 121.1 (2003), 20–27
5. K Bhate .Epidemiology of Acne Vulgaris, *The British Journal of Dermatology*, 168.3 (2013), 474–85.
6. Cheng, C. E .Self-Reported Acne Severity, Treatment, and Belief Patterns across Multiple Racial and Ethnic Groups in Adolescent Students. *Pediatric Dermatology*, 27: 446–452. doi:10.1111/j.1525-1470.2010.01286.x.
7. Nguyen QG. Diet and acne: an exploratory survey study of patient beliefs. *Dermatol Pract Concept* 2016;6(2):5. doi: 10.5826/dpc.0602a05
8. Poli F. An epidemiological study of acne in female adults: results of a survey conducted in France. *J Eur Acad Dermatol Venereol* 2001;15:541–5,
9. A.E. Koku Aksu.Acne: prevalence and relationship with dietary habits in Eskisehir, Turkey *Journal of the European Academy of Dermatology and Venereology a 2011 European Academy of Dermatology and Venereology.*
10. Brand-Miller JC. Physiological validation of the concept of glycemic load in lean young adults. *J Nutr* 2003;133:2728-32.
11. Danby FW. Nutrition and acne. *ClinDermatol*2010;28:598-604.
12. Cordain L. Implications for the role of diet in acne. *Semin Cutan Med Surg* 2005;24:84-91.
13. Berra B. Glycemic index, glycemic load: new evidence for a link with acne. *J Am Coll Nutr* 2009; 28(suppl):450S-4S.
14. Hoyt G. Dissociation of the glycaemic and insulinaemic responses to whole and skimmed milk. *Br J Nutr* 93(2):175-7 (2005 Feb).
15. Arbesman H. Dairy and acne—the iodine connection. *J Am Acad Dermatol* 2005;53:1102.
16. Smith RN. The effect of a high-protein, low glycemic load diet versus a conventional, high glycemic load diet on biochemical parameters associated with acne vulgaris: a randomized investigator-masked, controlled trial. *J Am Acad Dermatol* 2007; 57: 247–256.

Source of Support: Nil.

Conflict of Interest: None Declared.

Copyright: © the author(s) and publisher. IJMPP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882. This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Shahad Mahmoud Aldor, Aymen Hamed Alharbi, Bilqis Ahmed Albarakati, Imtinan Khalid Alsahafi, Ghaida Bakoar Alahmadi, Luai Mohammed Assaedi, Rami Fawzi Magliyah, Bassam Hussain Bugis. Low Glycemic Diet and Improvement of Acne Vulgaris Symptoms: Systemic Review. *Int J Med Res Prof.* 2018 Jan; 4(1):3-4. DOI:10.21276/ijmmp.2018.4.1.002