



Association between whey protein supplements and acne vulgaris

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General Note

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ABSTRACT

From process of isolated from milk, whey protein was formed. Whey proteins are Whey protein is consisting of β -lactoglobulin, immunoglobulins, α -lactalbumin, Lactoferrin, Lactoperoxidase, glycomacropeptide (GMP) and Bovine Serum Albumin (BSA). Diet and acne etiology had been investigated for several decades. Recent evidence confirmed the association between acne and whey protein. *Materials and Methods:* A total of 88 cases as gym trainers using whey protein to promote muscles strength and placebo were seen during the study period in the dermatology clinic of Al-Baha region from January 2019 to January 2020. Association between acne and whey protein were carefully examined every two weeks for one month. Analysis of the following parameters was applied: location and onset and presentation of lesions. *Results:* Out 88 new cases visited dermatology clinic in the last year, 81 patients had completed the study. Lesions in most of cases started two weeks after ingestion of whey protein (70.5%) versus placebo (5%). By the end of 4 weeks most of cases has acne formation after whey protein ingestion (95%) versus placebo (15%). *Conclusion:* Whey protein used in people to increase their muscle strength is strongly associated with acne.

Keywords: Whey protein, acne, chest, back

1. INTRODUCTION

Acne vulgaris is a common inflammation of pilosebaceous unit with many etiological factors like bacterial proliferation, hormone imbalance, genetic issues, abnormal keratinization, increased sebum production and enhance immune response. Acne is described by increase sebum production, comedo formation papulopustular lesions. In the literature it was suggested that milk intake may be a source for acneiform eruptions (Agamia et al., 2016). Milk could exacerbate acne formation by rising the of insulin like growth factor-1 (ILGF-1) level as well as increasing hormonal comedogenic effect like, androgen, progesterone, 5 α -reductase steroids and estrogen precursors (Melnik et al., 2013). Whey protein is a globular proteins mixture taken from whey, the extracted fluid created as a cheese product. Whey protein is sold as a nutritional complement, particularly athletes believe that they can increase performance and increase their muscular form when taking whey protein supplements. Teenager use of protein complements is becoming a famous health disease (Cengiz et al., 2017).

2. MATERIALS AND METHODS

A total of 88 cases including 63 cases gym trainers using whey protein to promote muscles strength and 25 cases as placebo were seen during the study period in the dermatology clinic of Al-Baha region. After written informed consent was obtained, patients with whey protein who attended the dermatology clinic of Salem Medical Care in Al-Baha region between 2019 and 2020 were included in this study. Prospective-descriptive study was conducted about clinical symptoms, signs, and association of 63 Acne patients who were visited to dermatology clinic from 2019 to 2020. The diagnosis was made according to the history and clinical presentation. Association between acne and whey protein were carefully examined every two weeks for three months. Analysis of the following parameters was applied: location and onset and type of lesions. After 2 weeks a common sites of acne are observed of patients e.g. chest, back shoulders and abdomen. Skin lesions is carefully observed and analyzed to comedones (white or black), papules, pustules, nodules and cysts.

The data were decoded at the end of three months, and the patients were divided in to two groups, receiving whey protein as group A; and placebo as group B.

Whey protein and acne development findings were matched with control findings and evaluated statistically using SPSS version 20.

3. RESULTS

Of 88 new cases seen in the dermatology clinic in the last year, 81 patients had completed the study. All cases were males range from 25 to 38 years. Lesions in majority of cases started two weeks after ingestion of whey protein (70.5%) versus placebo (5%). By the end of 4 weeks most of cases has acne formation after whey protein ingestion (95%) versus placebo (15%). The most commonly present lesions were papules, pustules and nodules (92%) of cases. The most common sites according to maximum severity and involvement number of lesions are chest followed by back and shoulders as in table 1 and figure 1. Comparison between whey protein and placebo is shown in table 2.

Table 1 Location of acne and patient's involvement

Site of maximum severity	Patients, n (%)
Chest	40 (65.5%)
Back	15 (24.6%)
Shoulders	5 (8.2%)
Abdomen	1 (1.7)

Table 2 Comparison between whey protein and placebo in formation of acne

Total patients (n = 88)	Whey protein (n = 63)	placebo (n = 25)
Follow-up	61 (96.8%)	20 (80%)
Acne formation after 2 weeks	43(70.5%)	1 (5%)
Acne formation after 4 weeks	58 (95%)	3 (15%)
Statistically significant at p=0.04%		

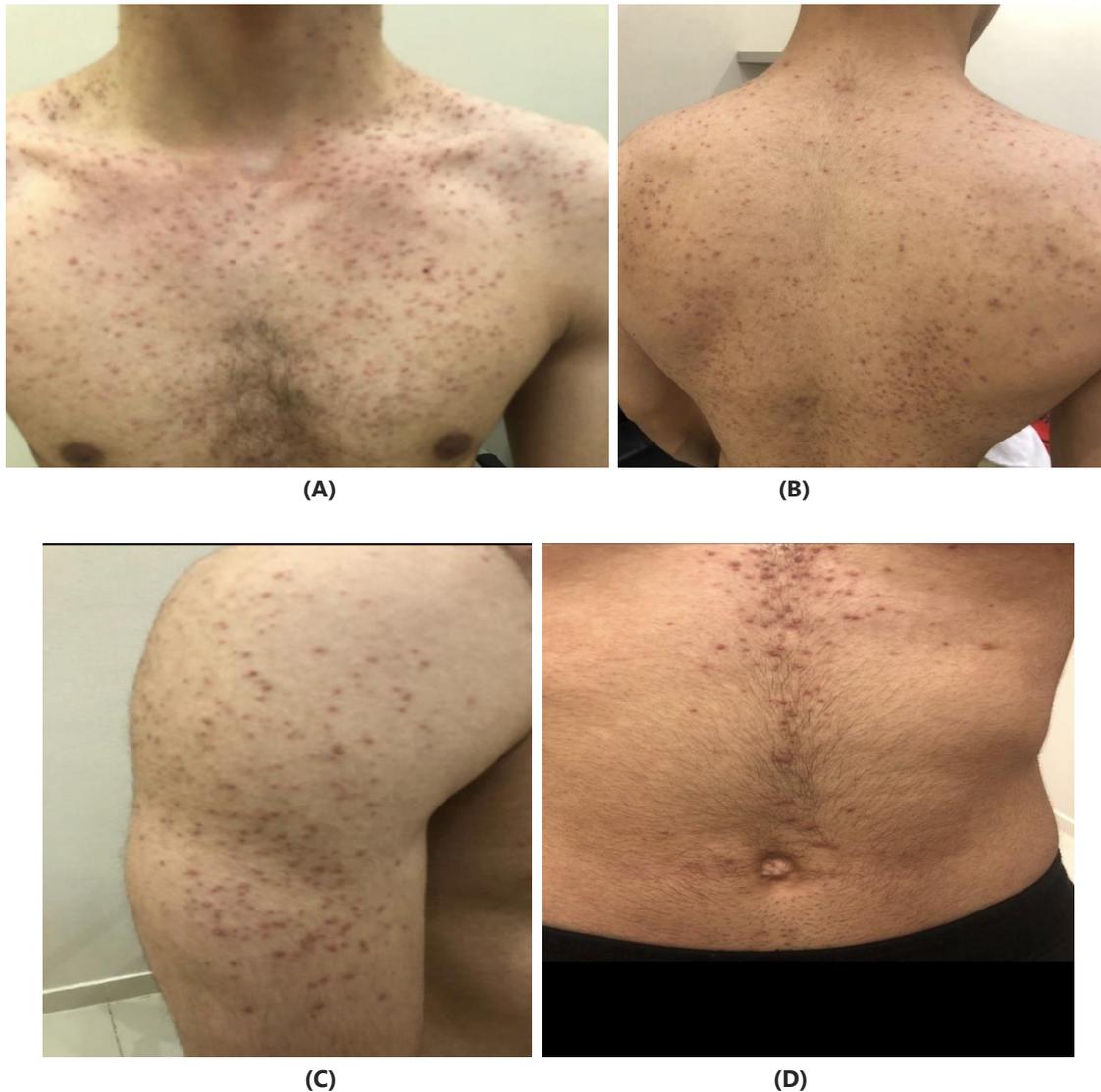


Figure 1: Papulopustular acne lesions in distributed in the chest (A), back (B), shoulder (C) and abdomen (D)

4. DISCUSSION

Acne vulgaris is a disease of pilosebaceous unit. Whey protein is the main protein in milk that used to increase muscle strength in bodybuilder or gym trainer is well known to induce acne in those cases by elevated insulin like growth factor and androgen precursor that induce acneiform lesions. Whey protein is very common nutritional supplement among gym trainer and it is strongly having pathophysiological evidence may induce acne (Simonart, 2012). It contributes to elevate insulin and ILGF1 plasma level that increase sebaceous gland secretions end by acne formation (Melnik, 2015). The daily dose of 50-100 g of whey protein is the optimum dose used in athletes. Many patients have poor response to topical keratolytics and antibiotics suggesting that oral antibiotics or oral retinoids are favorable treatments. The recurrent ingestion of high glycemic content of carbohydrates might exposed teenagers to severe hyperinsulinemia that stimulate growth follicular epithelium. Concentration of great circulating ILGF-1 and the insulin like growth factor binding protein -3 (IGFBP-3) are target on the keratinocytes differentiation. ILGF-1 appears to arbitrate comedogenesis resembling glucocorticoids, androgens and growth hormone. The rise in amount of acne formations was additional noticeable during the four weeks of complement use. There is no suggestion in the nonfiction that support such finding; it is supposed that the impact of the complement on acne rises to a peak during the first four weeks, with slow reduction over time (MaaroufJody, 2018).

5. CONCLUSION

Whey protein is well known to induce acne formation in gym trainer induce papulopustular acne lesions. Whey protein increase

insulin and IGF-1 that contribute to acne formation by increase comedogenesis.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

The study was approved by the Medical Ethics Committee of medical college, Al-Baha University, Code number: REC/Med/BUFM2019/0156.

Data and materials availability

All data associated with this study are present in the paper.

Peer-review

External peer-review was done through double-blind method.

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