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Whey Protein, the Favorite One among Bodybuilders in Curitiba-Pr. an Analysis Based on a Study Carried out in the Brazilian City Gyms

Ana Maria Da Silva Delai, Maria Gisele Dos Santos, Mateus Peres De Souza, Renan Winkler Obayashi

Department of Physical Education Federal University of Paraná (UFPR) Curitiba, Paraná, Brazil

***Corresponding Author:** Maria Gisele Dos Santos, Department of Physical Education Federal University of Paraná (UFPR) Curitiba, Paraná, Brazil*

ABSTRACT

The main point of this study was the consumption of Whey Protein by bodybuilders from Curitiba, aiming to verify the amount of protein ingested, and if it is within the total amount recommended by the Consensus of the Brazilian Society of Sports Medicine (2009). To achieve this objective, a questionnaire was administered to three randomly chosen gyms in Curitiba. The sample consisted of 42 males, aged 17 to 44-year-old, bodybuilders and consumers of Whey Protein. Data were treated in percentage terms, and structured into tables for data analysis. The research has shown most bodybuilders consume protein supplementation on their own, and make use of a high protein intake from supplementation in order to obtain anabolic benefitsregardless the daily protein recommendation, and the risks of excess protein.

Keywords: *Protein Intake, Whey Protein, Bodybuilders*.

INTRODUCTION

The beneficial effects of regular physical activity are found in large numbers in the area's research. When it comes to weight training, scientific studies point out that an adequate training program induces advantages in physical fitness and health. However, most individuals who develop regular programs of physical exercises with weights have a greater aesthetic concern, which culminates in an increase in muscle strength. And often this gain of muscular mass exceeds the physiological limits, becoming health-poor (OLIVEIRA et al, 2006).

Thus, in order to achieve a better performance, athletes and physical exercise practitioners crave a better physique in muscular terms, and adhere to the use of ergo genic resources. These resources are classified as nutritional, physical, mechanical, psychological, physiological or pharmacological (FONTANA, VALDES, BALDISSERA, 2003). According to the same author, some pharmacological agents such as growth hormone, anabolic steroids, amphetamines, and erythropoietin were banned by the International Olympic Committee (IOC), and other athletic organizations. Due to this restriction, there has been a significant increase in the consumption of dietary supplements in recent years as a legal and efficient alternative to activate the body's anabolic mechanisms, since all the nutrients are considered legal.

The use of supplements by physical activity practitioners is not well quantified, and little information on the subject is published in the literature. As can be seen, its emergence in the market has happened faster than regulatory adaptation and scientific research to evaluate their effects in the health of the people who use food supplements (PEREIRA; LAJOLO; HIRSCHBRUCH, 2003).

The most commonly used supplement among academics is protein or amino acid (Pereira et al., 2003, ARAÚJO et al., 2002, SANTOS et al., 2002, MIARKA et al., 2007, HALLAK et al. 2007).

According to Bompa (2000), proteins are a fundamental part of any diet as they are used for muscle repair and muscle building. During periods of intense training, inadequate protein intake can lead to protein degradation exceeding synthesis, resulting in loss of muscle tissue. Faced with the fact that protein is part of the muscle constitution, many people started to consume hyper-pprotein foods. In a study

carried out by a research group, in which I participated, it was observed the most consumed supplement by the bodybuilders from Curitiba was Whey Protein.

Whey Protein, a by-product of cheese, has already been considered a residue (WALZEN, 2002). Currently, this protein has become very popular because of its diverse functional properties, both in the clinical and physical activity areas (MARSHALL, 2004).

As was verified during the study conducted by the research group from the Federal University of Parana (UFPR), coordinated by the professor Dr. Maria Gisele dos Santos, the consumption of Whey Protein by the practitioners of physical activity is very high. Therefore, the purpose of this work is to study a little more thoroughly the properties and efficiencies of Whey Protein, as well as to document among consumers the amount they take in this supplement and if these are compatible with the amount recommended by the Brazilian Society of Sports Medicine.

METHODOLOGY

Sample

The sample for this study consisted of 42 males, aged 17 to 44 years, bodybuilders and consumers of *Whey Protein*.

Procedure

For the research, a questionnaire (appendix A) was used as an instrument for collecting data with questions. The questionnaire consisted of open and closed questions, which aimed to determine the training objective, amount of *Whey Protein* ingested per day, supplementation, and the total amount of protein (from diet and supplementation) in grams per kilogram per day, ingested by bodybuilders. This procedure was applied in three randomly selected gyms in the city of Curitiba. The students from the gyms were approached after their workout. Those who met the requirements proposed for the study could answer the questionnaire. The requirements were the students needed to be male, make use of *Whey Protein* supplementation, and perform bodybuilding practice. After a previous explanation, the selected students completed the questionnaire and returned them.

Analysis

For the current study, Excel 2007 was used for the percentage calculation and to describe the results obtained through the questionnaires applied. For the calculation of total protein intake, only 22 individuals were aware of the dietary intake, and only those individuals were calculated.

RESULTS AND DISCUSSION

Out of the 42 individuals evaluated (Table 4), the largest group were the 25-28-year-olds (n=15, 35.71%). Next were those 21-24-years-old (n=11, 26.19%), followed by 17-20-year-olds (n=5, 11.90%) and 29-32-year-olds (n=5, 11.90%). The smallest groups were 33-36-year-olds (n=3, 7.14%), forty-one to forty-four-year-olds (n=2, 4.76%) and 37-40-year-olds (n=1, 2.38%).

Table 4 .Age Group of *Whey Protein* Consumers (n=42).

Age Group (years)	AbsoluteFrequency	RelativeFrequency
17 – 20	5	11.90%
21 – 24	11	26.19%
25 – 28	15	35.71%
29 – 32	5	11.90%
33 – 36	3	7.14%
37 – 40	1	2.38%
41 – 44	2	4.76%

A study by Gost on (2008), which assessed the prevalence of nutritional supplement use, showed that most consumers (71%) of supplements were younger than 30 years. In acio et al. (2008), showed that those using food supplements comprised71.42% between 15 and 25-years-old, 10.85% between 26 and 30 years old, and 10.71% between 31 and 40 years-old. In the current study it was verified that the great part (35.71%) of the consumers of protein supplementation is in the age group between 25 and 28 years, and 76% of consumers are under 30 years old.

Regarding the purpose of the individuals training in bodybuilding, the majority(92.85%) said that their main objective was muscle hypertrophy, followed by strength (4.76%) and

muscular endurance (2.38%) as it can be seen in Table 5.

Table 5.*Objectives aimed at bodybuilding training (n = 42).*

Purposeof training	AbsoluteFrequency	RelativeFrequency
Hypertrophy	39	92.85%
Endurance	1	2.38%
Strength	2	4.76%

A study by In acio et al (2008) evaluated that the greatest interest in practice by bodybuilding was for physical activity comprising 57.81% and hypertrophy comprising 54.68%. In this study there is a great predominance on the individuals' part to practice bodybuilding aiming at muscular hypertrophy. This is probably because of the sample group's requirement to consume *Whey Protein*, since it is mostly consumed in order to increase muscular mass.

Table 6 shows that, in relation to the knowledge of the amount of protein ingested from the diet, there were 22 individuals (52.38%)who claimed to know the specific amount of protein ingested, while 20 males (47.61%)did not know how much protein they consumed per day.

Table 6. *Knowledge of protein intake during the day from feeding (n = 42)*

Knowledge of protein intake from food	AbsoluteFrequency	RelativeFrequency
Yes	22	52.38%
No	20	47.61%

Table 7 shows the consumption of *Whey Protein* per day. As can be seen there were 9 individuals(21.42%), who ingest 20 to 30g of protein, another 21.42% have an intake of 31 to 40g of protein, 9.52% consume between 51 and 60g of protein, 9.52% ingest between 111 and 120g of protein per day, 7.14% ingest between 31 and 40g of protein, 7.14% consume between 71 and 80g of *Whey Protein*, 7.14% 2.78% of the individuals consume between 61 and 70g of *Whey Protein*, 2.38% of the participants consume between 81 and 100g of protein, 4.76% of the individuals consume between 151 and 160g of protein, 2.38% 90g, 2.38% consume between 101 and 110g of protein, 2.38% between 121 and 130g and 2.38% of those interviewed consume between 141 and 150g of protein from daily supplementation.

Table7. *Amount of Whey Protein ingested per day by bodybuilders (n = 42)*

Amount of *Whey Protein* ingested (grams)	AbsoluteFrequency	RelativeFrequency
20 – 30	9	21.42%
31 – 40	3	7.14%
41 – 50	9	21.42%
51 – 60	4	9.52%
61 – 70	1	2.38%
71 – 80	3	7.14%
81 – 90	1	2.38%
91 – 100	3	7.14%
101 – 110	1	2.38%
111 – 120	4	9.52%
121 – 130	1	2.38%
131 – 140	0	0
141 – 150	1	2.38%
151 – 160	2	4.76%

Table 8 shows that as concerns the source of information for the consumption of *Whey Protein*, Those who claimed that the orientation was on their own through Internet searches comprised 42.85% of the sample, magazines and books of the area. On the other hand, another 21.42% answered that supplementation guidance came from the instructor of the gym, 19.04% received guidance from a Nutritionist, 11.90% were influenced by friends, 2.38% were led by supplement sellers, and 2.38% received medical advice for the consumption of *Whey Protein*.

Table8. *Source of information for Whey Protein supplementation (n = 42)*

Source of information for *Whey Protein* supplementation	AbsoluteFrequency	RelativeFrequency
Instructor	9	21.42%
Nutricionist	8	19.04%
Friends	5	11.90%
Media Research	18	42.85%
Supplementsellers	1	2.38%
Doctor	1	2.38%

Table 9 describes the most cited reasons the interviewed individuals gave to explain why they ingest *Whey Protein*. The reasons were *Whey Protein* increases muscle mass, being cited by 80.95% of individuals; secondly to maintain muscle mass, with 9.52%, 4,76% of the individuals claimed to consume *Whey Protein* to complete their diet, 2.38% of respondents ingest this protein for their nutritional value, and 2.38% consume *Whey Protein* because it makes them better disposed. Supplemental self-prescription is the most common among consumers of these products (ARAÚJO, 1999).

Table 9.*Reason why individuals consume Whey Protein (n = 42)*

Reason why individuals consume *Whey Protein*	AbsoluteFrequency	RelativeFrequency
Increaseofmusclemass	34	80.95%
Maintenanceofmusclemass	4	9.52%
Diet supplement (complement)	2	4.76%
Nutritionalvalue	1	2.38%
Betterdisposition	1	2.38%

According to Sgarbieri (2004), there is a culture inside the gyms that supposes that excess of protein causes muscular hypertrophy. It can be verified by what this study has shown us. Most individuals quoted ingestion of protein as the way to obtain an increase in muscle mass.

However, based on the amount of protein intake proposed by the Consensus of the Brazilian Society of Sports Medicine (2009), in order to aim correctly at muscular hypertrophy and strength, individuals would have their demands met with a consumption between 1.6 and 1.7g /kg/day, with a maximum intake of 1.8 g/kg /day, and for endurance work an intake between 1.2 and 1.6 g/kg/day. It is possible to see at Table 10 that 86.36% of the individuals have a hyper protein intake. In other words, this intake exceeds the maximum amount of protein per body kilogram per day. Some of the interviewees (9.09%) are taking in an amount below the recommended one for the increase of muscle mass, and 4.54% of the individuals have an adequate protein intake for the purpose of muscle hypertrophy.

It is worth mentioning that only 22 individuals were aware of their total protein intake. The rest of the individuals were only aware of *Whey Protein* intake. Therefore, it is not possible to correctly measure the total amount of grams per body kilogram per day, since this standardization occurs with the general consumption of protein, meaning from food and supplements.

Table10.*Total protein quantity in grams per kilogram body weight per day (n=22)*

Proteinrecommendation for hypertrophy	AbsoluteFrequency	RelativeFrequency
Below(< 1.6g/kg/day)	2	9.09%
Adequate (between 1.6 to 1.8g/kg/day)	1	4.54%
Above (> 1.8g/kg/day)	19	86.36%

A study by Theodoro et al. (2009), in whichtheyanalyzedthe diets ofbodybuilders, observedthatthehyperproteic diets predominated. Nearly half of the bodybuilders (43.7%) were in the recommended range, and 35.6% were above the recommended range for physical exercise. Another 22.6% of patients had protein consumption below the recommended level. Excessive intake of protein and amino acids, through food or protein supplements, has been shown to have harmful effects on health.

According to Pereira (2003), bodybuilders tend to have a protein-rich diet often above recommendations, due to fads, lack of information and inadequate guidance. The importance of the intervention of well-trained professionals for guidance and individualized prescription of protein consumption is emphasized.

Philips (2004) argues that there is no evidence to suggest that protein supplements are required for optimizing muscle growth or strength gain, because the stimulus to protein synthesis increases the efficiency of protein utilization, which reduces the need for high doses of protein in the diet.

According to Sgarbieri (2004), an excess of protein can cause damage to health, and possibly result in metabolic risks both for the hepatic functions, and for the renal functions.

According to Mahan (2005), excessive ingestion of proteins, through both diet and protein supplements, been linked harmful effects on health. Excess protein can lead to ketosis, gout and renal overload, increased body fat, dehydration, promote negative calcium balance and induce loss of bone mass.

Final Considerations

Due to the fact protein acts in the building of the muscle mass, many practitioners make the use of it as an anabolic resource. The most-used protein supplements is *Whey Protein*.

It was possible to verify in this study that the great majority (86.36%) of the bodybuilders from Curitiba gyms ingested a quantity of protein above the necessary (recommended) amount. However, this study also verified that the excess of protein does not bring any physiological benefit in the increase of muscle mass, and it can often lead to serious health problems.

Considering the reasons for ingesting *Whey Protein*, a percentage of 89.95% of individuals reported that they consume *Whey Protein* as an attempt to increase muscle mass.

Regarding the indication of supplementation, many individuals (42.85%) started protein supplementation on their own after studies conducted on the Internet, and 21.42% were motivated to start protein supplementation by a bodybuilding instructor.

Therefore, it is the responsability of health professionals to raise awareness among individuals using supplements, and to advice them to always look for medical or nutrition professionals with the information to achieve their goals. These professionals should be able to recommend the exact amount of supplements individuals should ingest. Consenquently, individuals can achieve their goals, while also considering health. Hippocrates once said, "If we can give each individual the exact amount of nutrients and exercise, which is neither insufficient nor excessive, we will have found the safest path to health."

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APPENDIX

APPENDIX A. Questionnaire applied to bodybuilders

Age:
Weight:
What is the purpose (goal) of training: ( )
Endurance ( )
Strength ( )
Hypertrophy
Are you aware of the daily intake of protein from food? If so, how much do you take per day?
How Many servings of *Whey Protein* do you ingest?
What is the total grams in one serving?
Who indicated the supplementation?
What is the reason for protein consumption?

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