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Treatment of Obesity with Diethylpropion as an Appetite Suppressant

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ABSTRACT
Obesity and the Use of Diethylpropion: A Review — Obesity is a medical condition characterized by excessive fat accumulation, elevated body weight, and increased waist circumference. It can manifest at any age and is influenced by various factors, including lifestyle, socioeconomic status, and behavioral patterns. Addressing obesity is critical due to its association with an increased risk of comorbidities. This review aims to evaluate the safety and efficacy of diethylpropion as a short-term pharmacotherapy for obesity. This article is based on a comprehensive literature review conducted across multiple databases, including PubMed, Scopus, Springer, Elsevier, NCBI, and Google Scholar, utilizing the search terms "diethylpropion" and "obesity." The literature search included studies published between 2015 and 2025. Research indicates that diethylpropion has demonstrated significant reductions in both weight and waist circumference. It is considered safe for patients with a history of hypertension and is associated with minimal side effects. The medication's effectiveness may be influenced by factors such as the timing of administration, genetic predisposition, and gender. In conclusion, diethylpropion represents a viable option for the short-term management of obesity in patients who have not achieved success through lifestyle modifications.

Keyword: Diethylpropion; obesity; weight loss

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INTRODUCTION

Obesity is a chronic disease characterized by excess fat accumulation, body weight, and waist circumference that exceed normal levels. It is the root cause of various diseases, including cardiovascular disorders, high cholesterol, diabetes, and other neurological conditions. According to data from the World Health Organization, there were 35 million children under five years of age who were overweight and 160 million children and adolescents aged 5–19 years who were obese in 2022 (Celletti et al., 2025; Organization, 2025; Van Hulst et al., 2025). Among adults, 16% were obese. The prevalence of obesity has increased worldwide, having quadrupled among adults and doubled among adolescents (WHO, 2025) (Mahase, 2022).

In developing countries such as Indonesia, obesity is a major public health challenge. In 2018, 20% of children, 14.8% of adolescents, and 35.5% of adults in Indonesia were obese. These data show that obesity can occur across all age groups and is a significant risk factor for disease. It is often accompanied by musculoskeletal disorders, including orthopedic conditions, sleep disturbances, limited mobility, skin buildup, and shortness of breath (Hruby & Hu, 2015; Simmonds et al., 2016).

Common contributors to obesity include medications that promote weight gain, such as insulin-class diabetes drugs, sulfonylureas, meglitinides, and thiazolidinediones. Hypertension medications such as cardiac beta-blockers, alpha-blockers, hormonal therapies, antihistamines,

and glucocorticoids may also contribute to weight gain. Moreover, obesity is influenced by lifestyle and environmental factors. Data show that children, adolescents, and adults increasingly consume foods with poor nutritional value—high in sugar, salt, and fat.

Excessive consumption of sugar-sweetened beverages is a key driver of obesity. Drinks such as flavored beverages, sports drinks, sugary teas, coffee, and other high-sugar beverages provide little nutritional value and greatly contribute to weight and fat gain, elevated blood sugar, and cardiovascular disease (UNICEF, 2024) (Awaliyyah, 2025; Muthmainnah et al., 2025; Trisnawati, 2026). Obesity is also strongly influenced by personal attitudes and behaviors, including eating habits, culture, and level of physical activity. Low community awareness and a short-term mindset exacerbate the problem.

Obesity is a major contributor to atherosclerosis. In individuals with obesity, an excessive accumulation of visceral adipocyte cells causes systemic inflammation and damage to blood vessels. This buildup can trigger plaque formation, which obstructs blood flow and leads to atherosclerosis. Therefore, obesity is closely associated with this condition (Henning, 2021).

In Indonesia, the treatment of obesity is guided by the National Guidelines for Clinical Services for the Management of Adult Obesity, which emphasize both pharmacological therapy and lifestyle modification. The use of anti-obesity drugs remains largely confined to mechanisms that suppress appetite and reduce fat absorption. Appetite suppressants, such as anorectic (anorexia) drugs, are considered alternative therapies when lifestyle modifications fail.

This review aims to evaluate the safety and efficacy of diethylpropion as a short-term pharmacotherapy for obesity. Research results show that diethylpropion significantly reduces both body weight and waist circumference. It is considered safe for patients with a history of hypertension and is associated with minimal side effects.

RESEARCH METHODS

This study constitutes a narrative literature review designed to synthesize existing evidence on diethylpropion for obesity treatment. A systematic search strategy was conducted across multiple electronic databases, including PubMed, Scopus, SpringerLink, and Google Scholar, to ensure comprehensive coverage. The search utilized a combination of key terms and Boolean operators: (“diethylpropion” OR “amphepramone”) AND (“obesity” OR “weight loss”). The search was restricted to articles published in English between January 2015 and December 2025 to prioritize contemporary and relevant evidence.

Included articles were limited to publications from 2015–2025 to ensure the relevance and novelty of the information. The inclusion criteria comprised experimental research articles, clinical trials, animal studies, and review articles discussing the effectiveness, safety, mechanism of action, timing of administration, genetic factors, and sex-based differences in response to diethylpropion therapy. Articles that were not available in full text, duplicates, or irrelevant to the research objectives were excluded. The selected articles were analyzed descriptively by extracting data related to weight loss, changes in waist circumference, and

diethylpropion safety profiles. The findings were presented in narrative form and summarized in tables.

RESULTS AND DISCUSSION

Table 1. Effectiveness of Diethylpropion as a short-term obesity therapy

Author	Kreteria	Effectiveness
(Nugraha et al., 2024)	Blood Pressure	Penggunaan diethylpropion
Limón-Bernal et al., 2021	Weight Loss	20% weight loss in female rats.
(Kalyanasundar et al., 2016)	Timing of Delivery	Diethylpropion administration during more activity Effective in losing weight and suppressing stable appetite
(Gómez-Silva et al., 2019)	Gene	Humans with ABCB1-rs1045642 and CYP3A4-rs2242480 genes cannot get the maximum effects of diethylpropion due to diethylpropion metabolism is metabolized quickly by the gene.
Lopez et al., 2025	Gender	Fast-lowering 7-day diethylpropion Weight of female rats compared to male rats

Diethylpropion, or amphepramon, is a psychotropic drug. Diethylpropion is a structural analogue of amphetamines that functions as an appetite suppressant in the central nervous system by modulating catecholaminergic activity. This mechanism leads to a significant reduction in calorie intake and consequently promotes weight loss. Diethylpropion has been approved as a short-term, 12-week obesity therapy in the United States.

A clinical trial involving 156 volunteers in Mexico with a BMI >30 kg/m² and <45 kg/m² who received diethylpropion for six months demonstrated significant reductions in body weight and waist circumference, with only mild side effects such as dry mouth. Diethylpropion was also associated with improvements in LDL, blood pressure, HDL, triglycerides, heart rate, glucose, and total cholesterol (Soto-Molina et al., 2014).

In a study by (Febriyanti et al., 2025) conducted at a pharmaceutical chemistry clinic in Indonesia, the use of diethylpropion combined with dietary modification as a short-term obesity therapy resulted in effective weight and fat loss without increasing blood pressure (Nugraha et al., 2024).

The effects of diethylpropion can be enhanced through combination therapy with other agents. Research on the safety profile of diethylpropion + topiramate as an anorectic agent showed favorable outcomes without increasing tension in rats. The combination of diethylpropion with topiramate produced a potentiating effect between the two drugs (Cortés-Moreno et al., 2018). Administration of diethylpropion with 5-hydroxytryptophan (5-HTP)/carbidopa also demonstrated a synergistic effect between the two compounds. In Bernal's (2021) (da Silva et al., 2025; Gerstner et al., 2021; Michicotl-Meneses et al., 2021; Vásquez-Reyes et al., 2024) study, this combination resulted in a 20% weight reduction in obese rats.

The timing of diethylpropion administration influences its effectiveness. Studies indicate that diethylpropion is most effective when administered during periods of physical activity, as it maximally suppresses appetite compared to administration near rest periods. When given at rest, diethylpropion may cause dietary disturbances; thus, administration before activity is recommended (Kalyanasundar et al., 2016).

The effectiveness of diethylpropion also varies according to genetic factors that affect drug metabolism. The ABCB1-rs1045642 and CYP3A4-rs2242480 gene variants have been shown to influence diethylpropion activity ($p < 0.05$) by accelerating its metabolism and reducing absorption efficiency (Gómez-Silva et al., 2019). The drug's effectiveness is further influenced by sex, as evidenced by statistical analyses of diethylpropion administration in female and male rats over seven days. These findings showed that female rats exhibited a different metabolic response compared to males.

CONCLUSION

Based on the results of the literature review, it can be concluded that obesity is a complex global and national health problem that is multifactorial in nature and contributes significantly to the increased risk of various chronic diseases such as cardiovascular disease, diabetes mellitus, and atherosclerosis. The high prevalence of obesity across all age groups indicates that comprehensive management interventions are necessary—through both lifestyle modifications and pharmacological therapies—when non-pharmacological efforts do not yield optimal results. Diethylpropion has demonstrated good effectiveness as a short-term pharmacological therapy for obesity, particularly through its appetite-suppressing mechanism in the central nervous system.

Various studies have shown that the use of diethylpropion significantly reduces body weight and waist circumference, with a relatively favorable safety profile, mild side effects, and no notable increase in blood pressure among most study participants. This makes diethylpropion a potential alternative therapy for obese patients who do not achieve satisfactory outcomes from lifestyle modification alone. The effectiveness of diethylpropion is influenced by several key factors, including the timing of administration, genetic variations, sex, and the potential for combination therapy.

Administering diethylpropion when the body becomes active is considered more effective in suppressing appetite, while certain genetic variations may accelerate drug metabolism and consequently reduce therapeutic efficacy. In addition, combination therapy with other agents such as topiramate or 5-hydroxytryptophan has shown potential synergistic effects in enhancing weight loss. Therefore, diethylpropion can be considered an effective and relatively safe short-term therapy for obesity, provided that its use is tailored to the individual characteristics of each patient and supported by dietary regulation and healthy lifestyle practices. Close clinical monitoring and further research are necessary to evaluate its long-term effectiveness and safety, particularly in larger and more diverse populations.

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