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Queen Alvina Gusti Firdaus
Endang Suprihati
Imam Mustofa
Suherni Susilowati
Ratna Damayanti
Lilik Maslachah
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The effect of epigallocatechin 3-gallate on body weight and abdominal fat of white rats (*Rattus norvegicus*) exposed to monosodium glutamate

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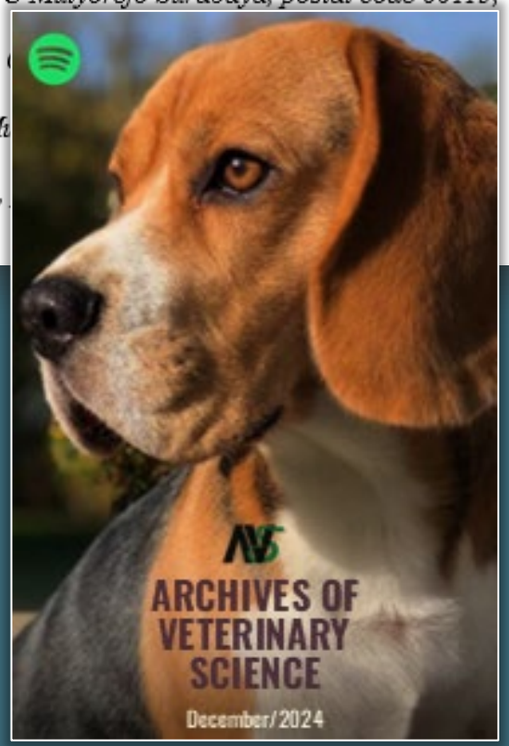
Queen Alvina Gusti Firdaus[1], Endang Suprihati[2], Imam Mustofa[3], Suherni Susilowati[3], Ratna Damayanti[4], Lilik Maslachah[4], Djoko Agus Purwanto[5], Adeyinka Oye Akintunde[6]*

[1]Student of Faculty of Veterinary Medicine, Universitas Airlangga, Kampus C Mulyorejo Surabaya, postal code 60115, Indonesia 0009-0006-0547-9331
[2]Division of Veterinary Parasitology Faculty of Veterinary Medicine, Universitas Airlangga, Kampus C Mulyorejo Surabaya, postal code 60115, Indonesia, 0000-0001-8878-0416
[3]Division of Veterinary Reproduction Faculty of Veterinary Medicine, Universitas Airlangga, Kampus C Mulyorejo Surabaya, postal code 60115, Indonesia, 0000-0003-4543-1659, 0009-0001-5171-4914
[4]Division of Basic Veterinary Science Faculty of Veterinary Medicine, Universitas Airlangga, Kampus C Mulyorejo Surabaya, postal code 60115, Indonesia, 0000-0003-2114-9317, 0000-0002-5291-4678
[5]Department of Pharmaceutical Chemistry Faculty of Pharmacy, Universitas Airlangga, Kampus C Mulyorejo Surabaya, postal code 60115, Indonesia, 0000-0002-2718-903X
[6]Department of Agriculture and Industrial Technology, Babcock University, Ilishan-Remo, Ogun State, Nigeria, 0000-0002-6013-0902



Author for correspondence:

Imam Mustofa

imam.mustofa@fkh.unair.ac.id

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ABSTRACT

MSG can caused obesity that can affect metabolism in the body. The administration of EGCG can increase energy expenditure and metabolism. This study aimed to determine the effect of epigallocatechin 3-gallate (EGCG) on body weight and the percentage of abdominal fat of white rats (R. norvegicus) exposed to monosodium glutamate (MSG).

ABSTRACT

Twenty-five rats were divided into five treatment groups. The C- group was given only aquadest and Sodium carboxymethyl cellulose (CMC-Na) 1%. The C+, T1, T2, and T3 groups were given MSG 120 mg/kg/BW and CMC-Na 1%, and EGCG at 4, 8, and 16 mg/kg/BW, respectively.

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All treatments were given orally for 28 days. The results showed that administration of MSG tends to be followed by an increase in body weight, except in group T2 where body weight was relatively stable.

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ABSTRACT

The administration of MSG 120 (to the C+ group) increased significantly ($p<0.05$) the percentage of epididymal fat and peritoneal fat. The administration of EGCG 8 (to the T2 group) significantly reduced ($p<0.05$) the percentage of retroperitoneal, epididymal, and peritoneal fat, compared to the group exposed to (C+ group).

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ABSTRACT

The percentage of retroperitoneal fat and epididymal fat was significantly lower ($p<0.05$), but the percentage of peritoneal fat was not significantly different ($p>0.05$) compared to normal mice (C-). The administration of EGCG 16 (to the T3 group) followed a significant increase ($p<0.05$) in retroperitoneal fat and epididymal fat, but the percentage of peritoneal fat was not significantly different ($p>0.05$), compared to (T2 group).

ABSTRACT

It could be concluded that the administration of EGCG 8 mg/kg BW/day reduced the weight of retroperitoneal fat, epididymal fat, and peritoneal fat compared to mice given MSG alone.

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ABSTRACT

This research is expected to become the main reference for product processed from the substance EGCG which can reduce body weight and abdominal fat.

Keywords: cardiovascular disease, epididymal, obesity, peritoneal, retroperitoneal.

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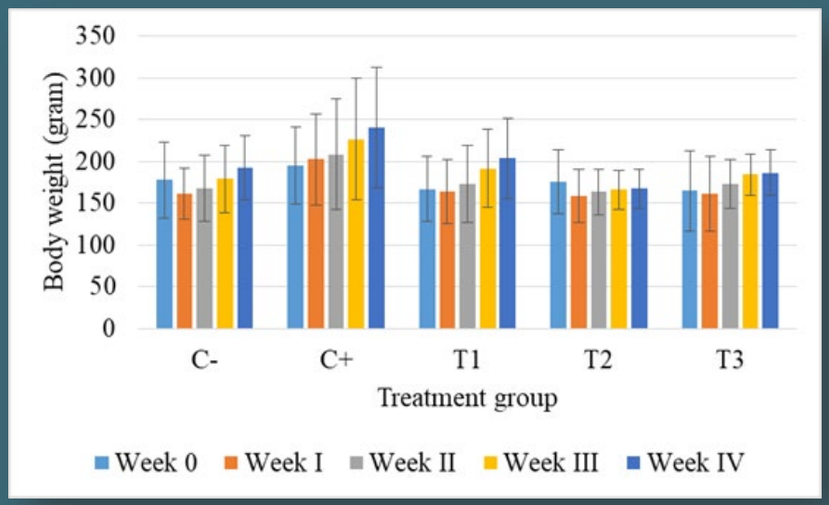

Figure 1 – Rat body weight (grams) by adding MSG and EGCG to rat feed at weeks 0 (before treatment), I, II, III, and IV. K(-): Rats given distilled water and CMC Na 1%; K(+): Rats given MSG 120 mg/KgBW; T1, T2, T3: Rats given MSG 120 mg/KgBW and EGCG at 4, 8, and 16 mg/KgBW.

Group	Fat (%)		
	R	E	P
C-	$3,26^{c}\pm0,88$	$1,69^{b}\pm1,06$	$0,66^{a}\pm0,36$
C+	$2,84^{bc}\pm0,77$	$3,15^{c}\pm1,16$	$1,65^{b}\pm0,69$
T1	$2,30^{b}\pm0,45$	$3,40^{c}\pm0,59$	$1,04^{a}\pm0,65$
T2	$1,20^{a}\pm0,21$	$0,29^{a}\pm0,22$	$0,82^{a}\pm0,23$
T3	$2,24^{b}\pm0,78$	$1,65^{b}\pm0,78$	$0,96^{a}\pm0,68$

Table 1 – Percentage (W/W) of retroperitoneal, epididymal, and peritoneal fat to live weight of white rats after administration of MSG and EGCG in rat feed.

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CONCLUSION

The consumption of monosodium glutamate 120 mg/kgBW/day for 28 days in rats (R. norvegicus) increased the weight of epididymal fat and peritoneal fat. The administration of epigallocatechin 3-gallate 8 mg/kgBW/day reduced the weight of retroperitoneal fat, epididymal fat, and peritoneal fat, compared to rats given monosodium glutamate.

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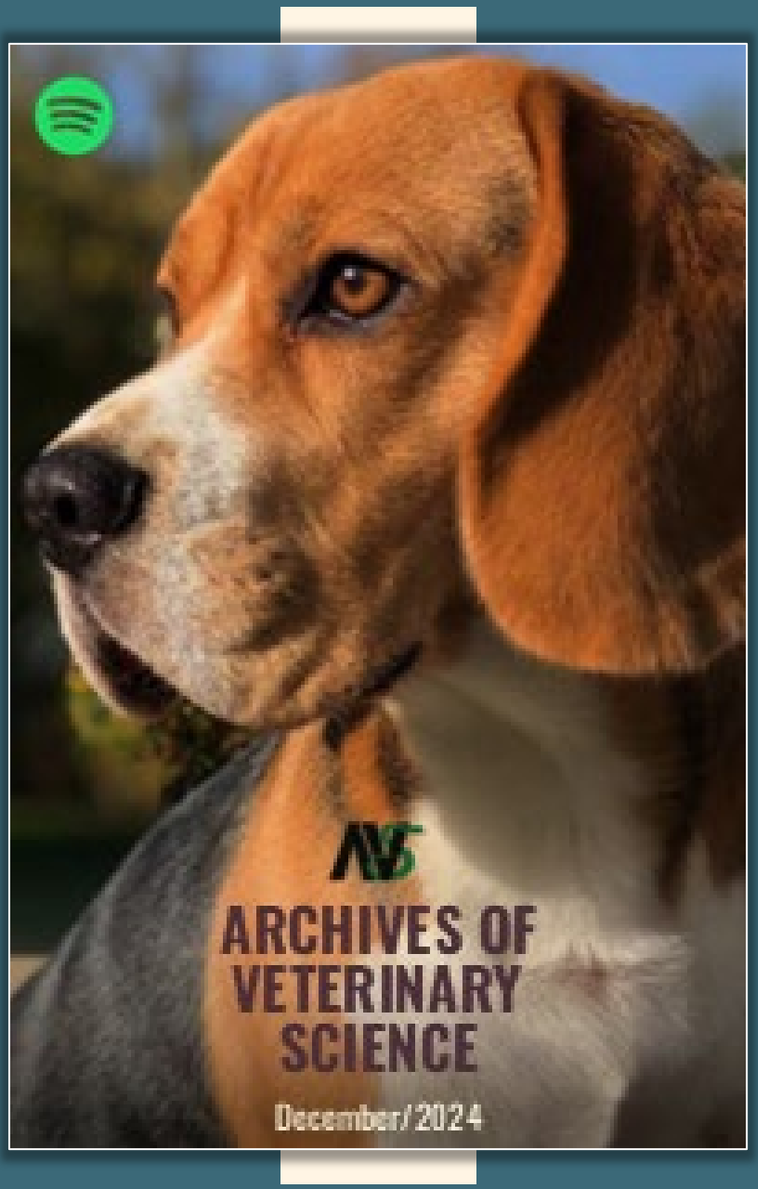

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