Yarrowia lipolytica SHOWED ANTIOBESITY EFFECTS IN A DIET-INDUCED OBESITY MODEL.

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Probiotics are live microorganisms that, in adequate amounts, provide health benefits to the host. These microorganisms are known to be widely commercialized, especially species from the lactic acid bacteria. The antiobesity effects of these microorganisms resulting from their probiotic effects have been previously shown. Yeasts are poorly studied as probiotics, but many species are interesting because they have advantages compared to bacteria, such as antibiotic resistance and the ability to be easily eliminated from the body after treatment interruption. Therefore, many studies are being accomplished to discover new yeast species with probiotic attributes and health benefits. Among the yeasts, *Yarrowia lipolytica* is recognized as non-pathogenic, safe for consumption, and has probiotic attributes previously shown *in vitro.* In addition, this species can metabolize and store lipids. However, no studies have evaluated their *in vivo* probiotic attributes and health effects. This study investigated the antiobesity effects of a *Y. lipolytica* strain mix (YM) in C57BL/6 mice with diet-induced obesity. In the bioassay, male mice were randomized into four experimental groups (12 weeks): C- control diet + saline; CY - control diet + YM at 1 x 10^9 CFU/ml; Ob - high-fat diet + saline and ObY - high-fat diet + YM at 1 x 10^9 CFU/ml. Food intake and body mass were monitored throughout the experiment. At the end, efficiency energy ratio (body mass gain (g)/total caloric intake (kcal)) - EER, abdominal circumference/naso-anal length ratio (cm/cm) – CA/NAL and visceral adiposity index (%) – VAI%, were calculated. VAI was obtained from the sum of the epididymal, retroperitoneal and mesenteric fat pad masses. Ob (3.7±0.3g/day) and ObY (2.5±0.1g/day) ate equally less food than C (3.7±0.4 g/day) and CY (3.7±0.3g/dia – $p<0.05$). However, energy intake did not differ among groups. Ob group gained more body mass (9.55 ± 4.16g) than all groups. ObY (5.9±2.5g) gained more body mass than CY (3.6±1.2g; ($p<0.05$), which did not differ from C (2.8±1.7g). EER was higher for Ob (0.85±0.24g/kcal), followed by ObY (0.49±0.21g/kcal; $p<0.05$); C (0.22±0.14g/kcal) EER did not differ from CY (0.27±0.15g/kcal). The CA/NAL was higher for Ob (0.92±0.04cm/cm) than the others ($p<0.05$), which did not differ (C=0.92±0.04; CY=0.96±0.05; ObY=0.98±0.08cm/cm). ObY (8.1±2,1%) had lower VAI% compared to Ob (10.0±2.6%, $p<0.05$), but higher than CY (5.67±2.0%) and C (4.9±0,8%). The YM showed antiobesity effects in a diet-induced model. Further studies must be accomplished to elucidate probiotic mechanisms that are beyond these effects.

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