Authors' objectives
To review the literature to determine the magnitude of effect of 150 microg desogestrel combined with 30 microg ethinyl E2, an oral contraceptive (OC) formulation, on plasma lipid concentrations in healthy women using meta-analysis techniques.

Searching
EMBASE was searched using the terms 'HDL', 'cholesterol', 'lipoprotein' and 'desogestrel'; this search was supplemented by a review of the reference lists of retrieved articles. Only English language reports, published between 1981 and 1991, were included in the review.

Study selection
Study designs of evaluations included in the review
All study designs were considered.

Specific interventions included in the review
Twenty-one-day cycles of 150 microg desogestrel and 30 microg ethinyl E2, given as an OC.

Participants included in the review
Healthy females who had been taking the 150 microg desogestrel-30 microg ethinyl E2 combination for 6 months, were included.

Outcomes assessed in the review
Total cholesterol, triglycerides, high-density lipoprotein cholesterol (HDL-C) and low-density lipoprotein cholesterol (LDL-C), were measured.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
Study design and sample size of the primary studies were recorded. No further validity assessment was reported in the review. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
It is not stated whether independent data extraction was carried out by two or more reviewers, although the authors do state that data extraction was verified before entering into a computerised database.

Methods of synthesis
How were the studies combined?
Scatterplots of the baseline and cycle 6 means for pairs of the parameters (total cholesterol, triglycerides, HDL-C, and LDL-C), and for each parameter independently, were examined.

Combined estimates of the differences between the means at the 3 time points (baseline, cycle 3 and cycle 6) were obtained for the following pairs of study subgroups:
1. studies with maximum age greater and equal to or less than 35 years;
2. studies with a washout period of less than and equal to or greater than three cycles;
3. the use of randomisation;
4. the use of additive or nonadditive statistical models; and
5. the presence or absence of a report of the standard deviation (or standard estimate of the mean) at cycles 0 and 6.

Both weighted and unweighted statistical methods were used. Descriptions of the statistical procedures used are provided.

How were differences between studies investigated?
The following study characteristics were examined for homogeneity:
1. the maximum age of participants;
2. the duration of the washout period before initiation of treatment with the study;
3. the timing of plasma sampling during the menstrual cycle; and
4. whether the studies were randomised.

Results of the review
Eighteen studies (14 randomised and 4 non-randomised) were included.

The changes from baseline to cycle 6 were estimated for the following parameters and are reported as mean (plus or minus standard error);

HDL-C, 0.15 (+/-0.02) mmol/L (p<0.001);
triglycerides, 0.28 (+/-0.03) mmol/L (p<0.001);
LDL-C, -0.12 (+/-0.04) mmol/L (p=0.011); and
cholesterol, 0.07 (+/-0.04) mmol/L (p=0.085, non significant).

Results are also presented as mg/dL.

Authors’ conclusions
When given in combination with 30 microg ethinyl E2, desogestrel increased HDL-C and triglycerides, and decreased LDL-C. The positive impact on HDL-C and LDL-C suggests that a potential cardioprotective benefit (rather than an atherosclerosis risk) may occur with prolonged use of such an OC, but this hypothesis will be difficult to prove.

CRD commentary
The review may have been enhanced by searching other databases such as MEDLINE and by including non-English language papers. Greater detail on the review methodology could have been presented, e.g. information on how decisions on relevance and validity of primary studies were made. More information on the primary studies and their quality would also benefit the review. However, the review does provide good detail on the methods used to combine the primary studies and a thorough discussion.

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